POSTWAR ECONOMIC GROWTH IN EASTERN EUROPE-
A Comparison with Western Europe

by

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POSTWAR ECONOMIC GROWTH IN EASTERN EUROPE-
A Comparison with Western Europe

This paper uses comparisons with Western Europe to evaluate postwar economic growth in Eastern Europe. Three main aspects of comparative economic growth are examined: the growth of production; the increase in personal consumption; and the efficiency in the use of inputs. In addition, the relative influence of external factors on economic growth in the two areas is considered. The method of analysis is statistical -- a comparison of various measures of economic growth and of the measurable factors which may have influenced this growth. Its purpose, however, is to provide evidence on a very intangible question -- the relative performance of the market-type economic system of Western Europe and of the Soviet-type "command-economy" of Eastern Europe.

An evaluation of economic performance founded on international comparisons can be highly artificial since governments or populations may set for themselves standards for growth or efficiency that differ greatly from those of other countries. In the case of Eastern and Western Europe, however, both history and geography give inter-country comparisons considerable importance for national governments and stimulate people to look across the border for standards of consumption. Moreover, even in the absence of direct comparisons and influence, technological and sociological trends on both sides of the border tend to be similar enough to make international comparisons meaningful.

The comparison in this study is limited to 6 Eastern European countries -- Bulgaria, Czechoslovakia, East Germany, Hungary, Poland, and Rumania -- and 9 Western European countries -- Austria, Belgium, Denmark, West Germany, France, Greece, Italy, Netherlands, and Norway. The selection was based partly on the availability of appropriate statistics -- which excluded such countries as Albania and Spain. A second criterion was a reasonable degree of similarity in economic system among the two groups, which excluded Yugoslavia because its system is a blend of state planning, decentralized state administration, and the market mechanism. A third criterion was to include only countries which met either defeat or occupation during World War II and thus suffered some economic retardation. For many reasons - some evident, some subtle, and some that are not yet clear -- victors, such as the United Kingdom, and neutrals, such as Sweden, have had a very different pattern of growth than the defeated or occupied countries. They emerged from the war with increased production and have since tended to grow more slowly.

The main statistical findings of this study are the following:

(1) Over the postwar period as a whole, the growth of production has been rapid in Eastern Europe, but no more so than in Western Europe. In recent years it has been slower in Eastern Europe than in Western Europe.

(2) The improvement in per capita consumption and probably also in general consumer welfare has been much smaller in Eastern Europe than in Western Europe.

(3) By all statistical indications, economic growth has been less efficient in Eastern than in Western Europe -- it has taken larger investment expenditures to obtain similar rates of growth. Lower efficiency, indeed, is a major cause of the relatively slow rise in consumption in Eastern Europe.

(4) Soviet exploitation of Eastern Europe, in contrast to large U.S. aid to Western Europe, probably was responsible for the slower recovery of the Eastern European economies after World War II, but neither this factor, nor the trends in the volume and terms of trade can explain the lower postwar efficiency of the Eastern European economies.

The conclusion from this statistical evidence is that the operation of the Soviet-type economic system in Eastern Europe -- that is, the interrelated set of economic policies and institutions patterned after those of the USSR -- is mainly to blame for this relatively poor performance. These policies and institutions embrace among other things the methods and principles of detailed state planning, the method of economic administration through a vast state bureaucracy, the relegation of the market mechanism to a minor role, and the collectivization of agriculture. The internal and external effects of this "system" are inseparable.

I. Characteristics of the Eastern European Economies

Excluding East Germany and the Bohomia-Moravia section of Czechoslovakia, which historically have been part of Central Europe, Eastern Europe has always been a relatively undeveloped region. Before World War II agriculture was the predominant economic activity, although there were islands of urban and industrial development. Peasants, by and large, were poor, eating mainly self-produced crops and buying little besides the most essential items. The industrial workers were much better off than the peasants, but there were few industrial jobs. In Poland, Rumania and Bulgaria, more people were employed in handicraft shops than in factories. Outside East Germany and Czechoslovakia, the main industries were textiles, leather and food processing (throughout the area), coal mining (Poland), oil extraction (mainly in Rumania), bauxite mining (Hungary), and nuclei of the metallurgical, metal-working and chemical industries. East Germany and Czechoslovakia were highly industrialized, but lacked a strong heavy industrial base, having concentrated on the manufacture of finished products.

Although postwar industrialization has raised considerably per capita GNP's in Eastern Europe, these remain considerably lower than those in most of Western Europe. In 1963, per capita GNP in Czechoslovakia and East Germany was less than three quarters of that in West Germany and about half way between the West German and Italian levels. Hungary and Poland were in an intermediate position, with per capita GNP's less than half

of the West German level and falling between Italy and Greece. Bulgaria and Rumania were in the rear, at about the level of Greece. The combined GNP of these 6 Eastern European countries was about 10 percent smaller than that of West Germany and came to roughly one third of the combined GNP's of the EEC countries or the USSR. The 6 countries range in size from Poland - the largest - whose GNP is about half that of Italy, to Bulgaria - the smallest - whose GNP is about four fifths of Norway's.

Two alternative sets of figures for GNP and per capita GNP in Eastern and Western European countries are shown in table 1, and the methods of calculation are described in Appendix A. The GNP's of the Eastern European countries were estimated through direct comparisons with West Germany by means of calculated exchange rates and quantity indexes. The relatives so obtained were applied to two estimates of the dollar value of GNP in West Germany -- one with the official exchange rate, the other with a calculated exchange rate obtained from a study for the OEEC. The results are shown in table 1.

The ranking of the Eastern European countries as to industrial production per capita is similar to that for GNP per capita, although, as might be expected, the differences among countries are greater. Estimates of the relative levels of industrial production, total and per capita, are shown in table 2. My estimates, which are described in Appendix A, apparently are nearly identical to those made by the Council for Mutual Economic Assistance (CEMA).

Table 1

Comparisons of GNP and GNP Per Capita
in Selected European Countries in 1964*

(1963 U.S. dollars)

	Using Official Exchange Rates for Western Countries		Using Calculated Exchange Rates for Western Countries	
	Total GNP bil. dollars	Per Cap. GNP dollars	Total GNP bil. dollars	Per Cap. GNP dollars
Eastern Europe				
Bulgaria	4.9	600	5.6	690
Czechoslovakia	18.0	1,280	20.7	1,470
East Germany	21.0	1,220	24.1	1,400
Hungary	9.0	880	10.3	1,020
Poland	24.1	770	27.7	890
Rumania	11.2	590	12.9	680
Total above	88.1	880	101.3	1,020
Western Europe				
Austria	8.1	1,120	9.3	1,290
Belgium	14.6	1,560	17.7	1,890
Denmark	8.6	1,820	10.1	2,130
France	83.6	1,730	97.0	2,010
West Germany	100.2	1,720	115.2	1,980
Greece	4.7	550	5.9	690
Italy	46.3	910	57.9	1,140
Netherlands	15.6	1,290	20.7	1,710
Norway	6.0	1,610	6.9	1,870
Total above	287.7	1,420	340.7	1,680

* See Appendix A for methodology.

Table 2

Comparisons of Industrial Production, 1961

Total Eastern Europe = 100

	My Estimate*		CEMA Estimate **
	Total	Per Capita	Total
East Germany	28	165	28
Poland	26	90	27
Czechoslovakia	23	165	23
Rumania	11	80	12
Hungary	8	60	7
Bulgaria	4	50	3
Total Eastern Europe	100	100	100
West Germany	123	220	
USSR			262

* See Appendix A

** See Planowane Hospodarstvi no. 4, April 1, 1964

The differences among Eastern European countries and between them and Western Europe / are more pronounced for per capita GNP and industrial production than for the sectoral distribution of GNP at factor cost, which is shown in table 3. The contribution of agriculture to GNP is considerably larger in most of the Eastern European countries than in nearly all the Western European countries -- which was to be expected -- and the contribution of services (all sectors other than industry and construction, and agriculture and forestry) is smaller. The contribution of industry to GNP on the average is only slightly smaller in Eastern Europe than in most of Western Europe, in spite of the fact that the relative volume of industrial output is much smaller. This may be due to high relative costs of industrial production in Eastern Europe, particularly in such countries as Bulgaria and Poland, although differences in the method of calculating factor costs may also have strong effects on the sector shares.

II. Statistics and Methods

Comparisons of economic growth and performance require comparable statistics and until recently, such statistics did not exist for Eastern Europe. In recent years, however, a great deal of work has been done to recalculate economic aggregates and indexes for Eastern Europe using Western-type methods. Much of this work has been a product or an outgrowth of the Project on National Income in East-Central Europe at Columbia University, under the direction of Thad Alton, who has published 3 monographs

Table 3

Percentage Distribution of GNP
at Factor Cost, 1960

	Percent of GNP Originating in		
	Industry and Construction	Agriculture and Forestry	Other Sectors (Services)
Bulgaria	39	29	32
Czechoslovakia	52	15	33
East Germany	54	9	37
Hungary	40	24	36
Poland	41	31	28
Austria	55	13	32
Belgium	45	8	47
Denmark	42	18	40
France	49	10	41
West Germany	55	7	38
Greece	28	28	44
Italy	48	19	33
Netherlands	44	12	44
Norway	39	11	50

For sources and methods, see Appendix B.

and a number of occasional papers (See appendices). The statistical analysis of this paper for Eastern Europe is based predominantly on these recalculated series.

The official series (on national income, industrial production, and so forth) differ considerably in concept and method from the recalculated series and tend to show considerably higher rates of economic growth. Although very sound analysis of trends in the individual countries can be based on judicious use of official statistics (as for example in the ECE's Economic Survey of Europe and Economic Bulletin for Europe), the same is not true of international comparisons. Moreover, the differences in methodology between Eastern and Western countries are such that rule-of-thumb adjustments (for example, to achieve greater comparability of coverage) rarely suffice -- complete recalculations are usually necessary. The differences in methodology can indeed be crucial to an evaluation of comparative economic performance. For example, the United Nations' Economic Commission for Europe in an otherwise very thorough and competent study* drew what I believe are wholly incorrect conclusions as to the relative productivity of investment in Eastern and Western Europe by relying on official series, with adjustments, for both sets of countries. According to the ECE, returns to investment during the 1950's were probably not greater in market economies than in planned economies. The use of recalculated series for the Eastern countries makes it clear that returns to investment were in fact considerably greater in market than in planned economies.

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*UN/ECE Economic Bulletin for Europe, Vol. XII, No. 1, Factors in Economic Growth in Europe during the 1950's. (especially Chapter II, p. 30)

Official Eastern European measures of the growth of national income are not comparable to Western-type measures for 3 main reasons. First, the Marxist concept of national income excludes so-called "non-productive services" (that is, direct governmental and private services and often also passenger transportation). In postwar Europe the output of direct services generally has grown more slowly than the output of goods so that their exclusion has tended to raise the rate of growth of national income. Second, market prices -- the basis of valuation for national income in Eastern Europe -- differ drastically from factor costs in these countries. This is because of the absence of explicit charges for the use of capital

and land and the collection of the resulting savings in accounting costs by the government in the form of the turnover tax. The turnover tax is levied mainly on industry, whose weight in national income is thereby increased, at the expense mainly of that of agriculture. Since industry usually is the most dynamic sector the rate of growth of national income is raised. Third, the method of calculating the growth of individual sectors of the national income differs from that used in the West. Although some of the Eastern European indexes of income originating in industry and other sectors give reasonable results, others do not, and little is known about them.

Official indexes of gross industrial production in Eastern Europe in my opinion overstate considerably the rate of growth. The main reason is that industrial production indexes in Communist countries are not just measures of the results of industrial activity, but also are devices for the direction of industry and the establishment of producers' incentives. Industrial managers, whose success often depended on fulfilling a plan for gross industrial production, had every incentive to produce an assortment of goods and to negotiate prices that would show the best results for the smallest effort. Although there were a multiplicity of controls designed to specify assortment and fix prices, these controls rarely prevented an inflation of the gross production index.*

* These points are developed further in Maurice Ernst, "Overstatement of Industrial Growth in Poland", Quarterly Journal Of Economics, November 1965.

III. Growth of Production

A. Gross National Product

Postwar economic growth has been rapid in both Eastern and Western Europe* (See table 4). In Western Europe total GNP in 1964 was about double the 1950 level and two and a half times the prewar level; in Eastern Europe, total GNP in 1964 was double both the 1950 and the prewar level. Economic recovery from the effects of World War II was more rapid in Western Europe than in Eastern Europe. By 1950, the Western economies were well beyond prewar levels, except in the case of Greece, where the effects of the civil war were felt for years. By contrast, GNP fell short of prewar levels in East Germany by 15 percent and in Hungary by 5 percent, just reached this level in Rumania, and showed a significant rise in Poland only because the change in boundaries greatly increased that country's economic potential -- in postwar boundaries Polish GNP in 1950 was at least 10-15 percent lower than in 1937.

After 1950, the Western European economies combined grew somewhat faster than the Eastern European economies combined, mainly because of the large weight and unusually rapid growth of West Germany. If we compare average growth rates with each country having equal weight, the rates in the East are about the same as those in the West.

The growth rates in Eastern Europe vary inversely with per capita GNP, East Germany being an exception because of its delayed recovery -- after 1955, East German growth is the slowest in the area. In Western Europe, growth

* that is, the 6 Eastern European countries and the 9 Western European countries listed earlier.

Table 4

Growth of GNP, Prewar to 1964

	Indexes, 1955=100					Annual Percentage Increases*			
	Prewar	1950	1955	1960	1964	1951-55	1956-60	1961-64	1951-64
Bulgaria	68	75	100	142	168	5.9	7.3	4.3	5.9
Czechoslovakia	79	84	100	137	145	3.6	6.6	1.3	4.0
East Germany	84	71	100	127	141	7.2	4.9	2.7	5.1
Hungary	80	76	100	123	147	5.5	4.2	4.6	4.8
Poland	72	79	100	127	155	4.8	5.0	5.0	4.9
Rumania	66	66	100	119	144	8.6	3.5	4.9	5.7
Total Eastern Europe	76	76	100	128	148	5.7	5.2	3.6	4.9
Unweighted average						5.9	5.2	3.8	5.1
Austria	62	74	100	129	151	6.1	5.2	4.2	5.2
Belgium	67	84	100	112	133	3.6	2.3	4.3	3.3
Denmark	68	91	100	127	157	2.0	4.9	5.5	4.0
France	66	80	100	126	155	4.4	4.8	5.3	4.8
West Germany**	51	65	100	135	163	9.1	6.2	4.8	6.8
Greece	93	71	100	131	183	7.0	5.6	8.7	7.0
Italy	71	75	100	133	165	6.0	5.9	5.5	5.8
Netherlands	58	76	100	122	146	5.6	4.1	4.5	4.7
Norway	62	84	100	117	143	3.6	3.2	5.1	3.9
Total Western Europe	62	75	100	129	157	5.9	5.2	5.1	5.4
Unweighted average						5.3	4.7	5.2	5.0

* Calculated from unrounded data.
** Excluding the saar.

For sources and methods, see Appendix B

rates range widely, from around 7 percent (Greece and West Germany) to 3.3 percent (Belgium), with no clear pattern.

There have been marked changes in growth rates over the years. On the average, growth in both Eastern and Western Europe was only a little slower in the second half than in the first half of the 1950's. An acceleration of growth in Czechoslovakia and Bulgaria was more than offset by a deceleration in East Germany, where postwar recovery finally had ended, in Hungary, as a result of the 1956 revolt, and in Rumania, mainly because of poor results in agriculture. Since 1960, however, growth in Eastern Europe has slowed considerably, while there has been little change in the Western rates. The sharp slowdown in Eastern Europe is due almost entirely to the severe economic recession in Czechoslovakia and a cut of nearly one half in the East German growth rate in comparison with 1956-60. Czechoslovakia sustained one of the highest growth rates in Europe during the late 1950's and in 1960. Growth slowed a little in 1961 and considerably in 1962. Then GNP fell nearly 3 percent in 1963 and did not rise in 1964; no other industrial country has had a more severe economic recession since World War II. The East German slowdown came at least a year earlier, under the strain of the Berlin crises and the sudden collectivization of agriculture, but it was not as severe as that in Czechoslovakia, annual growth having been fairly steady since 1962. Among the other Eastern countries, the sharp decline in Bulgarian growth reflects mainly the economic consolidation following an extremely rapid expansion during the "great leap" of 1959-60 and the increased rate of growth in Rumania

is influenced by the fact that 1960 was a bad agricultural year. Growth accelerated slightly in Hungary and decelerated slightly in Poland. Polish growth has been remarkably stable since 1950. In Western Europe growth rates increased during 1961-64 in 6 countries out of 9 and decreased substantially only in West Germany, which fell from first to sixth place among the 9 countries.

Some of the ranking of growth rates, although not the broad relationships between the Eastern and Western countries, are changed if we compare the growth of per capita GNP's (table 5). The largest difference is for Poland, where boundary changes, war losses and migration after the war caused a large decline in population. By 1950, Polish GNP per capita was about 50 percent above prewar levels (in the old boundaries) although total GNP had risen only 10 percent. In Czechoslovakia also, where the expulsion of the Sudeten Germans reduced the population, per capita GNP had increased almost one third from 1937 to 1950 with a 7 percent growth in total GNP. During the early postwar years East Germany gained some population, although much less than West Germany, as a result of the expulsion of Germans from the areas acquired by Poland. Between 1950 and 1962, however, the East German population declined steadily because of its unfavorable age structure and the flight to West Germany, while the West German population grew rapidly. In consequence, the growth of East German GNP per capita is about the same as that of West Germany for the postwar period (it is much smaller in comparison with prewar) in spite of a lag of one third in the growth of total GNP. On a per capita basis,

Table 5

Growth of GNP and GNP per Capita

Percentage Increases

	Prewar to 1964			1950 to 1964		
	GNP	Population	GNP per Capita	GNP	Population	GNP per Capita
Bulgaria	148	21	105	123	12	99
Czechoslovakia	84	- 3	90	73	13	53
East Germany	69	6	59	100	- 6	113
Hungary	83	10	66	93	8	78
Poland	116	-10	140	96	25	56
Rumania	117	21	79	117	16	87
Total above	94	3	88	94	13	72
Austria	146	6	132	103	4	95
Belgium	97	12	76	58	9	45
Denmark	129	24	84	73	10	57
France	136	15	105	93	16	66
West Germany	219	39	129	151	17	114
Greece	97	20	64	157	12	129
Italy	132	17	98	121	9	103
Netherlands	150	39	80	92	20	60
Norway	128	27	80	70	13	50
Total above	155	23	107	110	15	83

Sources for Population: U.S. Bureau of Census and OECD Statistics.

Hungarian growth is about average among European countries while Polish growth is one of the slowest.

B. Pattern of Economic Growth

Industrialization has been the dominant form of economic growth in Eastern Europe. As shown in table 6, industry and construction account for about 70 percent of the postwar increase in GNP in East Germany and Czechoslovakia and for nearly 60 percent even in so undeveloped a country as Bulgaria (twice as high a share as in Greece). The role of agriculture in total growth ranged from small (10 percent of so) to negative and the role of services ranged from a quarter to a third. The contribution of industry and construction to total economic growth was smaller in 6 out of 9 of the listed Western European countries than in any of the Eastern countries in spite of a generally higher initial level of industrial development, while the contribution of services was generally much larger.

1. Industrial Production*

Industrial production has increased more rapidly in Eastern Europe than in Western Europe over the entire postwar period, and at about the same rate as in Western Europe since 1960, as shown in table 7. All of the Eastern countries, except East Germany, had easily surpassed prewar levels by 1950 and since then annual rates of growth have averaged around 8 percent in Eastern Europe compared with 6 or 7 percent in Western Europe. As in the case of GNP, however, industrial growth in the Eastern countries has slowed

* Industrial production is here defined to include construction and all handicraft production.

Table 6

Composition of the Growth of GNP at Factor Cost
1951-1964

Percent of Increment in GNP

	Industry (incl. Construction)	Agriculture (incl. Forestry)	Services
Bulgaria a/	59	9	32
Czechoslovakia	68	- 2	34
East Germany b/	72	0	28
Hungary	59	9	32
Poland	66	11	23
Austria	62	7	31
Belgium c/	53	3	44
Denmark	48	8	44
France	55	5	40
West Germany	63	3	34
Greece a/	30	22	48
Italy	65	11	24
Netherlands	51	3	46
Norway	40	- 1	61

a/ 1951-63
b/ 1951-62
c/ 1956-64

Table 7

Growth of Industrial Production*, Prewar to 1964

	Indexes, 1955=100					Annual Percentage Increases			
	Prewar	1950	1955	1960	1964	1951-55	1956-60	1961-64	1951-64
Bulgaria	40	67	100	183	250	8.4	12.7	8.2	9.9
Czechoslovakia	69	80	100	155	167	4.6	9.1	1.9	5.4
East Germany	80	59	100	141	166	11.2	7.2	4.1	7.7
Hungary	57	65	100	131	179	9.0	5.5	8.2	7.5
Poland	53	63	100	148	196	9.6	8.1	7.3	8.4
Rumania	49	69	100	157	244	7.6	9.4	11.7	9.4
Total above	64	67	100	148	185	8.5	8.1	5.8	7.6
Unweighted average						8.4	8.6	6.9	8.0
Austria	47	69	100	134	159	7.8	6.0	4.3	6.2
Belgium	63	80	100	110	139	4.5	1.8	6.1	4.0
Denmark	59	90	100	130	168	2.0	5.5	6.5	4.5
France	65	79	100	131	166	4.9	5.6	6.1	5.5
West Germany	51	56	100	138	170	12.1	6.6	5.5	8.2
Greece	60	67	100	150	200	8.2	8.5	7.4	8.1
Italy	48	60	100	150	199	10.6	8.4	7.3	8.9
Netherlands	52	75	100	130	158	5.9	5.5	4.9	5.5
Norway	50	82	100	114	141	4.1	2.7	5.5	4.0
Total above	55	67	100	135	170	8.3	6.2	5.9	6.8
Unweighted average						6.7	5.6	5.8	6.1

* Includes construction for post war years, except Rumania and East Germany.
Excludes construction for prewar years.

See Appendix B.

down since 1960, largely because of the recession in Czechoslovakia,-- where industrial production in 1964 was below the 1962 level,-- and a fall of nearly one half in the rate of growth in East Germany.

Rates of industrial growth in both Eastern and Western Europe have been inversely related to the level of economic development and there is little difference in rates of growth among countries at similar levels of economic development. For example, the 3 least developed countries, Bulgaria, Rumania and Greece have been at or near the top in industrial growth rates, with Greece lagging somewhat behind the other 2 because of its more balanced economic development; in the next group, Poland and Hungary have lagged slightly behind Italy; and in the more advanced group, growth in Czechoslovakia has been about the same as that in France and the Netherlands. Eastern and Western Germany have been exceptions, both being industrialized countries with high growth rates until recent years, and West Germany has had the edge.

2. Agricultural production*

In contrast to industrial production, which grew quickly in all the Eastern European countries, agricultural production in the area has barely surpassed the prewar level, while it is more than 50 percent above this level in Western Europe. A substantial lag in Eastern European agriculture in comparison with Western Europe developed in the early postwar years and the lag increased during the postwar period. Only in Poland, Rumania, and Bulgaria did production in the early 1960's exceed the average for 1934-38, and most

* Agricultural production refers to the contribution of agriculture, forestry and fishing to the GNP in constant prices.

of the Polish gain is due to boundary changes. The more developed countries did much worse. Production in East Germany was 20 percent, and in Czechoslovakia nearly 10 percent, below the prewar level, and in neither of these countries has there been an upward trend since the early 1950's. (see table 8).

3. Services

This residual category of GNP is a composite of transportation, trade, and direct services, such as housing, personal services, and government services. Rates of growth vary a great deal among these components and, for individual components, among countries. By and large, the output of transportation, communications, and trade, approximately kept up with the total output of goods/ during the postwar period. In the case of/ direct services, government services increased much faster than direct private services and housing in the Eastern European countries -- indeed, the output of many personal services declined. In the Western countries the differences are in the same direction but less marked. These differences in both areas are offsetting, and production of services rose at about the same rate as GNP in almost all of the countries covered. (see table 9).

IV. Trends in Consumption and Consumer Welfare

The Eastern European consumer has not benefited in proportion to the growth of production. In the Western European countries, the growth of personal consumption since World War II and since prewar years has almost kept up with the growth of GNP. In the Eastern European countries, for which reliable consumption statistics are available (they are not for Bulgaria and Rumania), the growth in personal consumption was much slower than that of GNP (table 10).

Table 8

Trends in Agricultural Production

Indexes: 1950-53 average=100

	Prewar	1960-63 Average
Bulgaria	96	107
Czechoslovakia	114	105
East Germany	122	98
Hungary	120	118
Poland	95	126
Rumania	112	144
Austria	106	129
Belgium	75	131
Denmark	77	117
France	89	134
West Germany	88	119
Italy	85	125
Netherlands	77	123
Norway	85	96

Notes: Western Europe
1950-53 to 1960-63: GNP originating in agriculture and forestry in constant prices.
Prewar to 1950-53: Agricultural output, excluding forestry (total agricultural production less the use of self-produced materials).

See Appendix B.

Table 9

Trends in the Output of Services a/
1951-1964

	Annual Percentage Increases	Ratio of Rate of Growth of Services to Rate of Growth of GNP (in percent)
Bulgaria	5.9 b/	98
Czechoslovakia	4.2	105
East Germany	3.8 c/	69
Hungary	4.4	92
Poland	3.9	80
Unweighted average	4.4	
Austria	4.8	92
Belgium	3.0 d/	100
Denmark	4.4	110
France	4.7	98
West Germany	5.9	87
Greece	5.5 b/	81
Italy	4.6	79
Netherlands	4.4 b/	98
Norway	5.0 b/	135
Unweighted average	4.7	

a/ All sectors of GNP except industry, construction, agriculture, and forestry.
b/ 1951-63
c/ 1951-62
d/ 1956-63

Table 10

Growth of Personal Consumption in
Relation to that of GNP

Ratios of Growth Rates (in percent)

	1951-55	1956-60	1961-64	1951-64	Prewar-1964
Czechoslovakia	31	55	136	55	43
East Germany	160	90	22	114	79
Hungary	36	100	89	71	52
Poland	85	84	76	84	76
Austria	100	100	112	104	94
Denmark	75	76	102	85	81
France	111	83	114	102	78
West Germany	88	105	106	97	100
Italy	75	76	133	91	100
Netherlands	62	98	142	94	--
Norway	67	94	80	79	--

See Appendix B.

The most extreme difference is in Czechoslovakia, where personal consumption grew about half as fast as GNP, the discrepancy being most marked during the early postwar years. In East Germany on the other hand, consumption grew much faster than GNP in the early 1950's and almost as fast as GNP in the late 1950's. The reason was the open border with West Germany, which forced the East German regime to keep living conditions as close to those in West Germany as possible. The closing of the border in 1961 made this competition unnecessary at a time when the slowdown in overall economic growth made it more impractical. Consequently, there was almost no increase in East German consumption between 1961 and 1964. The postwar pattern of growth of consumption in Hungary clearly shows some causes and effects of the 1956 revolt. During the early 1950's the growth of consumption was less than 40 percent of that of GNP; since 1955 consumption and GNP have grown at about the same rates. In Poland, the stability of the ratios in table 10 hides some considerable fluctuations in consumption policy within the periods shown -- consumption was sacrificed during 1951-53; favored during the "new course" of 1954, the disorders of 1956 and the period of consolidation of Gomulka's power in 1957; and again given a low priority after 1957.

The effects of Communist policies and priorities on comparative changes in per capita consumption are shown in table 11. The increases in per capita consumption are much smaller in Eastern Europe than in Western Europe whether we consider the period since prewar years, since the early postwar years, or since 1960. Unusual circumstances explain the two exceptions -- the changes in

Table 11

Growth of Personal Consumption per Capita

	Percentage Increases		
	Prewar to 1964	1950 to 1964	1960 to 1964
Czechoslovakia	35	20	5
East Germany	43	134	3
Hungary	24	47	16
Poland	97	39	10
Austria	119	100	17
Denmark	58	43	19
France	76	67	18
West Germany	127	110	16
Italy	100	88	29
Netherlands	--	52	20
Norway	--	36	14

boundaries and the decline in population explain the large improvement in Poland since prewar days; and the late recovery and open border until 1961 explain the rapid postwar increase in East Germany. The only substantial increase in recent years among the Eastern countries, although a moderate one by Western standards, was in Hungary, a fact that has been noted by many travellers.

Lags of this sort in the growth of consumption inevitably had dramatic effects on relative consumption levels. Table 12 compares per capita consumption levels in East Germany, Czechoslovakia, Hungary and Poland with those in West Germany and Austria -- of all the countries considered, those which have the closest historical, social, and cultural ties, and so for which comparisons are most relevant to the governments and populations involved. Before World War II East Germany was roughly at parity with West Germany, with Czechoslovakia not far behind.* Since the war personal consumption in East Germany and Czechoslovakia have fallen to around 60 percent of the West German level. These two countries also lost a clear lead over Austria, which they now trail by a wide margin; and Hungary, which before the war probably was at about the Austrian level was some 40 percent below the Austrian level in 1964 and not much above that of Poland. These contrasts have been evident to travellers for some time but until recently the necessary statistics were not available.

* If prewar consumption were known for the same year -- for example, 1938 -- in all the countries, consumption in both parts of Germany would be higher than in table 12 relative to that in Czechoslovakia and Hungary.

Table 12

Comparative levels of
Personal Consumption Per Capita

	Prewar*	1950	1955	1960	1964
West Germany	100	100	100	100	100
Austria	81	82	79	78	79
Czechoslovakia	95	100	71	63	57
East Germany	95	54	68	68	60
Hungary	87	69	52	49	48
Poland	45	60	48	42	40

* 1936 for West Germany and East Germany;
1937 for Poland and Czechoslovakia
1938 for the other countries

Methods: Appendix A. For Austria linked with West Germany in 1955 using official exchange rate.

The contrast between the Eastern and the Western European countries in the growth of personal consumption is certainly large enough to warrant some definite judgments on relative changes in consumer welfare in spite of probable inaccuracies in the calculations and the fact that many other things besides the average volume of personal consumption affect welfare. Among the influences on consumer welfare that the personal consumption statistics do not reflect, some probably favor Western Europe, others Eastern Europe. For example, the range of choice among products and models has been considerably narrower in Eastern Europe than in Western Europe. Recurring shortages of many products and the consequent need to queue up for hours, possibly to go home empty-handed, also has been a negative feature of the Eastern European scene. On the positive side has been the large increase in the supply of free, or nearly free, social services, such as educational and health services and recreation, which, in contrast to personal consumption, probably was at least as rapid in Eastern as in Western Europe (although to make certain of this would take additional research).

Most difficult of all to evaluate are the changes in the distribution of income among various socio-economic groups. This is still largely an unexplored subject on which available information is very scarce. My general impressions on Eastern Europe, based mainly on Polish data, are the following. Among the various socio-economic groups the peasants since prewar days have had the largest increase in per capita consumption. The main reason has been a shortage of agricultural products, caused originally by the disruptions of World War II, and later →

sustained by the inadequate growth of agricultural production. The Communist governments tried at various times to depress the farmers' terms of trade, but were never successful for long because of the high demand for food. Semi-skilled and unskilled blue-collar workers also saw a considerable improvement in their standard of living, particularly those who formerly had been peasants. These groups of workers gained from what appears to have been a general reduction in wage-differentials due both to egalitarian socialist ideology and the easy overfulfillment of work norms. They also were the main beneficiaries of the low prices of necessities, such as bread, and the rationing of housing at nominal rent levels. On the other hand, the skilled blue collar workers often suffered from these changes and the white collar workers lost the favored economic and social status that they had had before the war. The prewar middle class, of course, fared worst of all, and the relative and absolute position of managerial and professional people generally declined, although with some exceptions. According to a Polish estimate*, which places the overall increase in per capita consumption from 1937 (old boundaries) to 1960 at 100-115 percent, the increase in per capita consumption of farm families was more than double that of non-farm families -- 125-150 percent compared with 60 percent -- (the increase resulting from the shift of population from farm to city also is substantial). The increase in non-farm consumption was due only in part to a rise in real monthly wages (30 percent). Other factors were the near elimination of unemployment, an increase in the number of bread-winners per family and a

* Leszek Zienkowski, Dochod Narodowy Polski 1937-1960 (Warsaw, 1963, pp.199-201).

large increase in moonlighting. Considering that the work-week lengthened and that the above Polish estimates probably have some upward bias, (the Polish figure for the percentage increase in total consumption is 25-40 percent above the estimate used in the present study) it is quite likely that the choice of weights largely determines whether average real wages increased or declined. In any case, real wages, and probably also per capita consumption, of some social groups certainly are still lower than before World War II, and in 1956 -- the time of the Poznan riot and the near-revolution in Warsaw -- most groups of older workers had ample reason to believe that they were worse off than before the war.

Although the other Eastern European countries probably experienced less dramatic changes in income distribution than Poland, they also had much smaller increases in average per capita consumption. The net effect on the real incomes of the less privile()ged groups, consequently, was probably similar to that in Poland.

V. The Cost of Economic Growth

A low productivity of investment has been the major cause of the lag in the growth of consumption in Eastern Europe. Eastern European countries used a considerably larger proportion of their GNP for investment than Western European countries to achieve similar rates of growth in output. The productivity of investment was lower in Eastern Europe in spite of several favorable factors, including a more rapid increase in industrial employment, a distribution of investments that favored industry at the expense of the more capital-intensive service sectors, and relatively smaller needs for the replacement of fixed assets. A strong case can be made, therefore, for attributing the low productivity of investments in the Eastern countries to the economic policies and institutions that have characterized communism of the Soviet type.

A. Volume and Distribution of Investment

In both Eastern and Western Europe thekey factor in postwar economic growth has been the large and rapidly rising level of investments. The share of gross fixed investment in GNP at factor cost increased steadily in nearly all Eastern and Western European countries during the entire postwar period,* as shown in table 13. Typically the Western European shares rose from 20 percent or less in the early 1950's to near 25 percent in the early 1960's, while those in Eastern Europe (excluding East Germany) went from the low 20's to near 30 percent. In East Germany

* The method of derivation is described in Appendix B.

Table 13

Size and Distribution of Gross Fixed Investment

		As a Percent of GNP a/				As a Percent of Total Investment b/		
		Total Investment	Investment in Industry c/	Investment in Agriculture d/	Investment in Services	Investment in Industry	Investment in Agriculture	Investment in Services
Eastern Europe								
Bulgaria:	1950-54	23.7	10.6	4.1	9.0	45	17	38
	1955-59	27.7	12.1	7.6	8.0	44	27	29
	1960-63	41.5	19.3	11.2	11.0	47	27	26
Czechoslovakia:	1950-54	23.5	10.6	2.3	10.6	45	10	45
	1955-59	27.3	11.4	4.3	11.6	42	16	42
	1960-63	27.7	12.9	4.4	10.4	46	16	38
East Germany:	1950-54	14.5	5.8	1.8	6.9	40	12	48
	1955-59	19.4	8.3	2.2	8.9	43	11	46
	1960-63	23.6	11.4	2.9	9.3	48	13	39
Hungary:	1950-54	25.9	12.2	3.6	10.1	47	14	39
	1955-59	24.2	11.0	3.9	9.3	46	16	38
	1960-63	27.2	12.0	5.3	9.9	44	19	37
Poland:	1950-54	21.1	9.9	2.0	9.2	47	10	43
	1955-59	25.1	11.0	3.2	10.9	44	13	43
	1960-63	28.1	12.5	3.4	12.2	45	12	43
Western Europe								
Austria:	1950-54	20.1	7.2	2.5	10.4	36	12	52
	1955-59	23.1	7.8	3.2	12.1	34	14	52
	1960-63	24.1	--	--	--	--	--	--
Belgium:	1955-59	17.1	5.5	0.8	10.8	32	5	63
	1960-63	19.1	6.7	0.6	11.8	35	3	62

Table 13 (Continued)

		As a Percent of GNP a/				As a Percent of Total Investment b/		
		Total Investment	Investment in Industry c/	Investment in Agriculture d/	Investment in Services	Investment in Industry	Investment in Agriculture	Investment in Services
Western Europe								
Denmark:	1950-54	17.2	3.1 e/	2.6	11.5	18 e/	15	67
	1955-59	18.6	3.2 e/	1.9	13.5	17 e/	10	73
	1960-63	22.5	4.6 e/	2.2	15.7	21 e/	10	69
France:	1950-54	18.1	--	--	--	--	--	--
	1955-59	20.3	7.4 f/ g/	1.6 f/ g/	11.3 f/ g/	36 f/g/	8 f/g/	56 f/g/
	1960-63	21.7	8.5 f/	1.3 f/	11.9 f/	39 f/	6 f/	55 f/
West Germany:	1950-54	21.1	7.9	1.3	11.9	38	6	56
	1955-59	24.3	9.2	0.9	14.2	38	4	58
	1960-63	26.4	10.3	1.5	14.6	39	6	55
Greece:	1950-54	15.9	4.3	1.6	10.0	27	10	63
	1955-59	19.2	3.5	2.0	13.7	19	10	71
	1960-63	28.9	--	--	--	--	--	--
Italy:	1950-54	19.7	6.8	2.6	10.3	35	13	52
	1955-59	22.4	6.7	2.7	13.0	30	12	58
	1960-63	25.6	8.5	2.6	14.5	33	10	57
Netherlands:	1950-54	21.5	6.9	1.2	13.4	32	5	63
	1955-59	24.4	7.5	1.0	15.9	31	4	65
	1960-63	24.7	7.9	1.0	15.8	32	4	64

a/ Percent at estimated factor cost in constant prices. See Appendix B.
b/ Distribution at constant market prices.
c/ Includes construction.
d/ Includes forestry.
e/ Excludes construction and handicrafts.
f/ Calculated from the distribution in current prices.
g/ 1956-59.

the high priority given to raising consumption during the 1950's and the heavy reparations payments to the USSR until about 1957 (see section VI below), greatly limited investment, which was low even by Western European standards. Since the ending of reparations, and especially since the raising of the Berlin wall, investments have increased rapidly, becoming a respectable share of GNP.

Much more striking are the differences in the distribution of investment. Investment in industry (including construction) and agriculture (including forestry) took a much larger share of total investment in Eastern Europe than in Western Europe; investment in services, a correspondingly much lower share. The Eastern European countries put a remarkably uniform 45 percent of investments into industry and construction, while few of the Western shares, even in the most industrialized countries, approached 40 percent and one (Greece) was as low as 20 percent, less than half that of Bulgaria. The share of agriculture in total investment is much greater in Eastern than in Western Europe not only in absolute terms but also in comparing countries where the relative importance of agriculture in the economy is similar (for example, Bulgaria and Greece; East and West Germany; Czechoslovakia and France). Moreover, in the East the share of agriculture in investment has been rising while the contribution of agriculture to GNP has been falling. In one Eastern European country, Poland, agricultural investments have not been high by Western standards considering the large size of the agricultural sector; but as will be seen later, the exception proves the rule -- Poland is the only Eastern country which has not collectivized agriculture.

As a result of the higher share both of total investment in GNP and of industry and agriculture in total investment, investment in these sectors took a much larger share of GNP in the East than in the West, as shown also in table 13.

The counterpart of the high investment in industry and agriculture in Eastern countries is the low investment in services, -- transportation, trade, housing, and so forth. Typically, the share of services in total investment has been around 40 percent in the East, compared with 60 percent in the West, although with wide variation among individual Western countries. An adequate breakdown of investment in services is lacking, but it appears that the East invested relatively less than the West both in "tertiary" sectors like transportation and trade and in social overhead like housing.

B. Productivity of Investment

The estimates of the growth of output and of gross fixed investment provide measures of the productivity of investment. In accordance with usual practice, the reciprocal of the productivity of investment -- the ratio of gross fixed investment to the increment in output -- was used*.

* For the economy as a whole, these were obtained as the ratios of the percentages of gross fixed investment in GNP at factor cost to the average annual percentage increase in GNP. For the 3 main sectors of GNP (Industry and construction, agriculture and forestry, and services), the ratios are the average shares in GNP of the sector's investment to the rate of growth in the sector's output, the latter being weighted by the average share of the sector's contribution to GNP. For all periods, the increase in output is lagged one year behind gross fixed investment -- for example, average annual investment in 1950-54 is related to the average rate of growth in output during 1951-55.

We will call this ratio the investment cost ratio (or just investment costs) instead of the more usual, but cumbersome term, incremental capital-output ratio.

The investment cost calculations, the results of which are summarized in table 14, reveal some important differences between the Eastern and Western European countries. Investment costs in Eastern Europe were higher than in Western Europe -- on the average by some 25 percent for the total economy, by 40 percent for industry, and by a great deal in agriculture. Only for services were the ratios similar in the 2 areas. Very few Western investment ratios exceed those in any of the Eastern countries and the differences between the most comparable countries of the 2 groups are very large. For example, the Bulgarian ratios exceed those in Greece by 75 percent for the total economy and by more than 100 percent for industry; Czechoslovak investment costs are two thirds more than those of France for the total economy and more than double the French in industry; Hungarian and Polish overall ratios respectively are only 25 percent above those of Austria and Italy, but in industry the difference is 100 percent and two thirds. Investment costs in agriculture were astronomical in Bulgaria, Czechoslovakia, and East Germany (in the latter country, net agricultural output declined), and were higher in Hungary than in any of the listed countries of Western Europe. However, Poland with its predominantly private agriculture, had a low ratio, even by Western European standards.

Table 14

Comparative Investment Costs, 1951-64

	Gross Fixed Investment per unit of Increase in Output a)			
	GNP	Industry	Agriculture	Services
Bulgaria	5.1	3.8	33.6	4.7
Czechoslovakia	6.7	4.4	40.0	7.8
East Germany b)	6.1	3.5	c)	7.2
Hungary	5.3	4.0	9.6	6.1
Poland	5.0	3.4	3.6	9.5
Unweighted average	5.6	3.8		7.1
Austria	4.3	2.1	7.6	7.1
Belgium b)	5.9	4.7	3.6	7.7
Denmark	4.9	1.9	5.5	8.0
France	4.1	2.8	4.5	5.7
West Germany b)	4.6	2.9	8.3	8.6
Greece	3.0	1.8	n.a.	5.5
Italy	3.9	2.0	5.3	7.8
Netherlands	5.0	3.2	4.4	6.5
Unweighted average	4.5	2.7	5.6	7.1

a) Increase in output lagged one year behind gross fixed investment
b) 1956-64
c) Decline in output

Note: Norway is excluded because its investment statistics have a broader coverage than those of other countries (they include all kinds of repair expenditures).

Investment costs have tended to be higher in Eastern Europe than in Western Europe during the entire postwar period, but the difference has been growing in recent years, as shown in table 15. The astronomical cost ratios for Czechoslovakia during 1961-64 reflect the near stagnation of output in the face of a high level of investment, and the ratio in East Germany has become the second highest among the listed European countries, after having been the lowest during the early 1950's, when a considerable amount of unused productive capacity still remained because of the delayed recovery from the effects of the war.

C. Factors in Investment Costs

The wide differences in investment costs are the key to a comparative analysis of the determinants of economic growth in Eastern and Western Europe. The remainder of this section will deal with some of the factors that may have caused these differences in investment costs -- the growth and distribution of labor inputs; the sectoral and branch distribution of investment; the options and policies regarding replacement of fixed assets; and a number of pertinent institutional factors and policies in industry and agriculture.

1. Labor Inputs

The overall rate and pattern of growth of employment was similar in the two parts of Europe, as shown in table 16.* In both

* Comparable employment statistics are more scarce than comparable production statistics. Those shown in table 16 cover the 1951-62 period for most countries, but shorter periods for a few countries.

Table 15

Changes in Investment Costs

	Gross Fixed Investment per Unit of Increase in Output*					
	Total Economy			Industry		
	1951-55	1956-60	1961-64	1951-55	1956-60	1961-64
Bulgaria	4.0	3.8	7.7	4.3	2.6	5.5
Czechoslovakia	6.5	4.1	25.2	5.1	2.6	12.2
East Germany	2.0	4.0	8.7	1.1	2.3	5.0
Hungary	4.7	5.8	6.0	3.8	5.2	3.6
Poland	4.4	5.0	5.8	3.2	3.6	3.4
Austria	3.3	4.4	5.7	1.8	2.4	--
Belgium	--	7.4	4.4	--	6.7	2.8
Denmark	8.6	3.8	4.4	3.8	1.4	1.7
France	4.1	4.2	4.2	--	2.7	2.8
West Germany	2.3	3.9	5.5	1.3	2.5	3.4
Greece	2.3	3.4	3.3	2.2	1.5	--
Italy	3.3	3.8	4.6	1.7	1.8	2.4
Netherlands	3.8	5.9	5.7	2.8	3.2	3.6

* Increase in output lagged one year behind gross fixed investment.

Table 16

Growth of Employment and Output per Employee, 1951 - 1962 a/
Annual Percentage Increases

	Employment b/			Output per Employee c/		
	Total Labor Force d/	Industry	Agriculture	Total	Industry	Agriculture
Bulgaria	0.5	5.2	- 1.3	5.6	4.7	2.0
Czechoslovakia	1.0	3.1	- 3.2	4.2	3.2	3.7
East Germany	0.0	- 0.1	- 3.0	5.5	8.4	2.8
Hungary	1.2	4.6	- 2.1	3.4	2.8	3.8
Poland	1.1	3.5	- 0.8	3.6	5.1	3.1
Rumania	1.0	3.6	- 0.2	4.7	5.2	3.9
Unweighted average	1.0	3.3	- 1.8	4.5	4.9	3.2
Belgium	0.3	0.4	- 3.5	2.8	3.1	6.2
Denmark	1.3	2.0	- 1.6	2.5	2.1	3.2
France e/	0.2	1.1	- 3.5	4.8	4.6	6.5
West Germany	1.5	3.1	- 3.0	5.6	5.0	4.8
Italy e/	0.7	4.5	- 3.0	4.8	4.1	5.3
Netherlands	1.1	1.3	- 1.8	3.4	4.1	3.9
Unweighted average	0.9	2.1	- 2.7	4.0	3.8	5.0

a/ Industry includes construction (except in East Germany and Rumania); agriculture includes forestry.
b/ 1951-62 unless otherwise specified.
c/ For Total and for Industry, 1951-62 unless otherwise specified; for agriculture, calculated from increases in output from the 1950-53 average to the 1960-63 average.
d/ Includes the unemployed and the military.
e/ 1956-62.

Sources: Eastern Europe, U.S. Bureau of Census; except for employment in construction.
Employment in construction from various statistical yearbooks of individual countries.
Western Europe: OECD Manpower Statistics, 1950-1962.

Eastern and Western Europe, the growth of the total labor force was less than one quarter as fast as the growth of output per person, and it is possible that there was no increase at all in the total number of hours worked in several countries. In industry both employment and output per worker increased faster in the Eastern than in the Western countries, but on the average the difference was greater for employment (two thirds) than for output per worker (one third). Agricultural employment declined in all the countries of both areas but on the average the decline was more rapid in the West, and consequently the advantage of the West was greater for output per worker in agriculture than for agricultural output. These averages disguise some wide differences among countries -- particularly the contrast between East German growth, which resulted entirely from increased labor productivity, and West German growth, which was supported by the fastest increase in employment among the countries listed. Nevertheless it appears that somewhat less substituting of capital for labor was necessary in most of the Eastern countries than in the Western countries to achieve a given rate of growth in output. A definite judgement on the relative role of labor inputs in Eastern and Western Europe must await a much more thorough study of the use of labor and also of education, training, and other influences on the quality of the labor force. But it is probable that the effect of labor inputs on relative investment costs was as worst neutral, and most probably tended to keep costs in the East lower than those in the West.

2. Sectoral and Branch Distribution of Investment

The relatively high investment costs in Eastern Europe clearly are not due to the sectoral distribution of investments. Indeed, the opposite is true -- the sectoral distribution of investment in the East was intended to keep and should have kept, overall investment costs lower than in the West. The reason is evident from table 14 -- investment costs are higher in services, into which the Eastern countries put a relatively small share of investments, than in the economy as a whole, and much higher than in industry (almost double in the Eastern countries and two and a half times in the Western countries).

The Eastern countries followed the strategy of maximizing expenditures in the construction of new factories (or major expansion of old factories) by minimizing expenditures on the modernization of railroads, the construction of a modern road network, the expansion of warehouse space, and the satisfaction of consumer demand for housing. This strategy could be sustained for some years because to a point the use of capacity in these services is quite elastic. It was hoped that the extra boost given to industrial production by concentrating investments in industry would be sufficient to allow the backlog of investment demands in services to be made up eventually without strain on the economy. These hopes were disappointed, however. We have seen that agriculture took a large part of investment with little yield (for reasons to be described later), and the expected advantage in industrial production did not

materialize because of the relatively low yield of industrial investments. Moreover, the possibilities for squeezing more output from existing capacity in services have been running out and in recent years industrial growth has been hindered with increasing frequency by a lack of freight cars (notably in Czechoslovakia), while great waste of agricultural products has resulted from the lack of storage facilities and adequate farm-to-market roads. In the future, the need to make up for the deficiencies caused by the short-sighted policies of the past probably will raise overall investment costs and hence limit the possible rate of economic growth.

It is unlikely that these conclusions on the effect of the distribution of investment on investment costs would be greatly changed if more detailed comparative data on investment allocations were available. Within industry, the Eastern countries probably put a greater emphasis than the Western countries on some capital-intensive branches, like steel and cement, and less emphasis on some labor-intensive branches, like textiles. On the other hand, chemicals and petroleum refining, which are both highly capital-intensive, probably were developed more intensively in the West.

3. Replacement and Maintenance of Fixed Assets

Eastern Europe had another advantage over Western Europe that should have tended to hold down its investment costs -- the fact that replacement needs took a smaller part of its gross investment. There are no comparable data on capital stock for Eastern and Western European

countries, but it is probable that Eastern countries, being in general less developed, had lower average capital-output ratios than the Western countries both before World War II and in the early postwar years. It is also likely that the average age of capital was somewhat less in the East than in the West because the industrial revolution had started later. For both these reasons a smaller share of GNP is likely to have been needed in the East than in the West to cover replacement needs for capital. Moreover, since investment was a higher share of GNP in the East than in the West, the share of replacement needs in investment would have been smaller even if their share in GNP was the same. Thus it is probably safe to assume that net investment correctly measured -- that is, gross investment, less the expenditures required to maintain the productive capacity and efficiency of the existing capital stock -- was a considerably larger share of gross investment in Eastern Europe than in Western Europe. This means, of course, that investment costs in the East were relatively even higher measured with net investments than with gross investments.

In practice, the Eastern European countries appear to have tried to maximize the increase in productive capacity by minimizing retirements, relying on repairs to maintain the productivity of existing assets. Again the intention was to hold down investment costs. The few available data on actual retirements of fixed assets indicate that retirement rates in Eastern countries were extremely low. For example, they were less than one percent of productive fixed assets per year in Czechoslovakia during most of the

1950's.* Actually, this policy probably had the opposite effect from that which was intended -- in the end, it probably increased investment costs. Expenditures on repairs, both capital repairs, which are included in the present investment statistics, and current repairs, which are not included, were high but insufficient, leading to frequent breakdowns of equipment (the tractor standing idle for lack of spare parts is as common a scene in Eastern Europe as in the USSR), which in turn created unused capacity and caused a loss in efficiency. Moreover, the strong bias against retiring existing assets, long after they had become obsolete, caused some of the most productive investment opportunities to be unused.

4. Other Factors Affecting Investment Costs

We have seen that the growth of employment, the broad sectoral distribution of investment, and the maintenance and replacement needs for fixed assets all should have helped the Eastern European countries to keep investment costs below those in Western countries. The influence of external factors is discussed in the next section. Here we will consider from an internal point of view the effect of such factors as the introduction and use of new technology, and the planning and management of production.

In general, the relative backwardness of the Eastern European countries should have given them opportunities for a more rapid technological

* K. Novotny, "Vyoi-zakladnich fondu v letech 1948-1957", Statisticky Obzor, no. 1, 1959, page 15

appropriate than in Western Europe (such an advantage has often been attributed to the USSR relative to the US). In addition, the relatively larger gross investments and probably much larger net investments in Eastern Europe, provided relatively greater means to take advantage of these opportunities. Among Western countries, high shares of investment in GNP usually have been accompanied not only by a rapid growth of GNP but also by low investment costs.* Large investment not only can mean a large injection of new technology, but also opportunities for introducing economies of scale in new and old plants. However, the relatively small size of the Eastern European economies tends to limit the possible economies of scale. There could be offsetting opportunities in foreign trade, but these opportunities probably were less favorable in Eastern than in Western Europe.

There is no way of measuring the actual development of technology in Eastern and Western Europe. One gains the impression that new technology in Eastern Europe was inferior to that in Western Europe, partly for lack of effort, partly because of bad planning and management, and partly because of lack of access to the best Western and Soviet technology, (technology in the Communist bloc was generally inferior to that in the West). Any technological disadvantage for Eastern Europe was bound to have the most serious effects on the industrialized countries, East Germany and Czechoslovakia. But technological lags are by no means the only explanation for the high investment costs in Eastern countries.

* See, for example, Angus Maddison, Economic Growth in the West (New York, Twentieth Century Fund, 1964), page 77 and United Nations, Economic Commission for Europe, Economic Survey of Europe in 1961, part 2, Some Factors in Economic Growth in Europe during the 1950's, Chapter II, page 20.

Bad planning and management were also important, and indeed, contributed to the technological lags.

An important source of inefficiency was the insistence on investing at rates which strained the capacity of the construction and machinery industries. The result was unduly high costs and long periods of construction for new plants* and an accumulation of unfinished projects well beyond what is probably usual in the West. The value of unfinished investments in Czechoslovakia, East Germany and Hungary has amounted to about one year's gross fixed investment.**

In industry, the bulk of investments went for new plants, often in previously undeveloped sites, leaving insufficient investments for an efficient modernization of existing plants. (We have already discussed a similar bias in regard to replacement).

The main recipients of investments in new plants were of course the least developed industrial branches and those where there was the least flexibility in the utilization of existing capacity. Most basic industrial branches -- at first, metallurgy, and later electric power, fuels, chemicals and construction materials -- had a great deal of new plant construction because they were initially relatively less developed than the branches producing finished goods and there was continuously an

* See, for example, Andrzej Karpinski, Zagadnienia socjalistycznej industrializacji Polski (Warsaw, 1958), pages 89-92.
** United Nations, Economic Commission for Europe, Economic Survey of Europe, 1962, Part 1, pages I - 20-23.

incipient shortage of industrial materials. Many new branches of the machinery industry also were built. Existing machinery plants and nearly all of light industry, however, received very little investment; their management was always under strong pressure to squeeze more output from existing equipment and what improvements there were entailed the installation of a few new machines, leaving production processes unchanged.

Moreover, new plants in the East often were run at well below full capacity and produced at high unit cost for a long time after they had been commissioned.* This was probably due partly to inexperience, at least in the less industrialized Eastern countries, but the principal cause was certainly poor planning of the plants and poor coordination of the construction of complementary facilities and of supplies and components.

There are also plenty of indications that bad management led both to unused capacity -- for example, the well-known "storing" of foundry capacity by machinery plants to protect themselves against possible shortages of parts -- and to unnecessarily high costs of production, which in turn held down the possibilities for increasing output. The institutional roots of such problems are well known; they will be taken up briefly in the concluding section.

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* According to Karpinski, op. cit. pages 206-216 in 1955 nearly all the major industrial plants built during 1949-55 in Poland produced for some time at higher unit costs than the old plants, in spite of considerably greater capitalization and an advantage in technology.

The principal cause of the extremely high investment costs in agriculture already has been mentioned. The collectivization of agriculture, and before that the threat of collectivization and the discrimination against private farmers increased the demand for investment while they held down the growth of agricultural output. Collectivization increased the demand for investment in several ways: by creating a need for common livestock shelters and other "overhead" expenditures which do not necessarily raise production; by hastening the flight of labor from agriculture and hence the need for machinery to replace the labor; by tending to reduce the effective input of the remaining farm workers, at least those who work on collective land and livestock, and so again increasing the need for mechanization. At the same time collectivization tended to depress output because of reduced incentives for farmers to work hard, carefully, and skillfully. Complaints are often heard from Eastern Europe that mechanization and other farm investments were inadequate. This inadequacy, however, is largely a reflection of the inefficiency of agricultural institutions in using available capital.

Inefficiency in the system of economic planning and management in Eastern Europe has been prevalent during the entire postwar period and was probably worse during the early 1950's than today. Recently, however, it has been more apparent because it has become more of an obstacle to economic growth. Until around 1960, although plans for the cost of investment projects, the growth of labor productivity, and the reduction

of unit costs of production were rarely fulfilled, production goals nevertheless were often achieved by mobilizing so-called "hidden reserves". There were many such reserves; mobilizing labor from the farm and the kitchen for use in industry; keeping obsolete equipment in production; making increased use of existing productive capacity in railroads, warehouses, and plants in low priority industries; and taking advantage of easy opportunities for the rationalization of production after industry had been nationalized. The government's ability to pass on the burden of inefficiency to the consumer, was another kind of "hidden reserve" for investment could be raised rapidly enough to generate high rates of growth in output in spite of high investment costs./ When increased consumer resistance and increased strain in the supply of raw materials were manifested during the mid 1950's, most of the governments had to temporarily lower or stabilize the share of investment in GNP, raise consumption and concentrate on straightening out the "disproportions" which had developed in the economy. New intensive investment drives were launched during the late 1950's, however, causing "reserves" once again to be used up at a rapid rate, and these drives were to continue during the early 1960's. Collectivization of agriculture, which accelerated between 1958 and 1961, made matters worse. By about 1960 the reserves had nearly run out in the more industrialized countries, East Germany and Czechoslovakia. Agriculture had run short of labor, most housewives were already working, the strain on the railroad system had become excessive, and in many branches of the

Among the burdens passed to the consumer were the poor quality, assortment, and design of consumer goods.

machinery and light industries equipment and processes were too obsolete to produce in accordance with modern technical specifications. At the same time, both domestic and foreign customers were becoming increasingly discriminating and large inventories of unsaleable goods accumulated. With the lack of production reserves and the greatly reduced possibilities for dumping low-quality products on domestic or foreign consumers, the inefficiency of the system of planning and management was bound to force a sharp slowdown in economic growth.

VI. External Factors

The foregoing analysis indicates that economic performance in Eastern Europe was decidedly inferior to that in Western Europe. Production grew no more rapidly in the East than in the West; consumption increased much more slowly; and by all indications, economic growth was achieved less efficiently. It remains to be seen to what extent the East's inferiority in performance can be attributed to external disadvantages, for example, to Soviet impositions in contrast to U.S. aid, less favorable price terms, or more limited access to foreign goods and technology. We will deal first with quantifiable aspects of external economic relations -- comparative trends in the volume of imports; foreign aid and impositions; and the terms of trade -- and then evaluate the effects of these factors on economic performance and consider also non-quantifiable factors, such as the broad foreign economic environment.

A. Statistical Evidence

1. Trends in the Volume of Imports

Except in East Germany, trends in the volume of imports were at least as favorable to economic growth in Eastern Europe as in Western Europe. Imports grew very rapidly in both areas, as shown in table 17. Until the early 1960's annual rates of growth in the volume of imports (that is, the value of imports in constant prices) were in excess of 10 percent in nearly all the Eastern European countries, and for the most part were below 10 percent in Western Europe. During the early 1960's, the growth of imports has slowed

Table 17

Growth of Imports in Constant Prices

	Indexes: 1955=100				
	Prewar a/	1950	1955	1960	1964
Bulgaria	58	73	100	262	447
Czechoslovakia	58	64	100	189	258
East Germany	371 b/	37	100	194	233
Hungary	47	58	100	187	291
Poland	38	72	100	164	233
Rumania	48	54	100	148	272
Total above	137	59	100	185	262
(excl. East Germany)	49	65	100		
Austria	60	61	100	167	233
Belgium c/	66	75	100	141	207
Denmark	n.a.	80	100	155	222
France	73	73	100	143	229
West Germany	78 b/	47	100	146	214
Italy	46	64	100	199	297
Netherlands	59	72	100	146	211
Norway	65	71	100	143	194
Total above	n.a.	64	100	152	224

a/ East Germany and West Germany, 1936; Poland and Czechoslovakia, 1937; Bulgaria, 1939; all other countries, 1938.
b/ Includes inter-regional trade between East Germany and West Germany.
c/ Includes Luxembourg.

Sources: See Appendix C. All prewar data in prewar boundaries.

in Eastern Europe and accelerated in Western Europe. The post-1950 expansion began from levels which were already above those of the late 1930's in all the countries covered, except East and West Germany. The exception for the two Germanies is due to the inclusion of estimates of interzonal trade in the prewar statistics. Interzonal trade had been far more important to East Germany than to West Germany, a factor which largely explains why the volume of imports in 1950 was only about 10 percent of that of 1936 in East Germany, while it was 60 percent in West Germany.

In nearly all of Europe imports grew much more rapidly than GNP, as shown in table 18. Traditionally, dependence on imports had been greater in Western Europe than in Eastern Europe, largely because most of the Western countries were more industrialized. The prewar shares of imports in GNP had been surpassed by 1950 in all of Eastern Europe, except East Germany, but had not been in Western Europe, except in Italy and West Germany. Since 1950 the share of imports in GNP has risen steadily in every country and the difference between Western Europe and Eastern Europe has narrowed further. By 1964 the smaller Eastern European countries (Bulgaria and Hungary) had achieved higher import shares than the larger Western European countries and much higher shares than before World War II. The Bulgarian experience is especially noteworthy, the import share having increased from 9 to 24 percent in less than a decade. The Polish and Rumanian shares, however, continue to be much lower than those in Western Europe -- a reflection of the relatively rich resources of these countries in relation to their degree of industrialization. The contrast

Table 18

Relation of Imports to Production

	Imports as a Percent of GNP (from values in constant 1963 dollars)					Import Index as a Percent of Industrial Production Index 1955=100			
	Prewar	1950	1955	1960	1964	Prewar	1950	1960	1964
Bulgaria	8	9	9	17	24	146	109	143	178
Czechoslovakia	6	6	8	12	15	84	80	122	155
East Germany	37*	4	8	13	14	464*	63	137	141
Hungary	5	6	8	13	17	82	90	143	163
Poland	3	6	6	8	10	72	114	111	119
Rumania	4	5	6	8	12	98	78	96	112
Austria	15	12	15	20	23	127	89	125	147
Belgium**	25	23	25	32	40	106	94	129	149
Denmark	n.a.	19	21	26	30	n.a.	88	119	132
France	9	7	8	9	12	113	93	109	138
West Germany	18*	8	12	12	15	153*	83	106	125
Italy	5	7	8	12	15	96	105	133	149
Netherlands	31	26	30	36	44	115	97	112	133
Norway	25	20	24	29	33	130	87	125	137

* Includes inter-regional trade between East and West Germany.
** Includes Luxembourg in imports.

Note: Prewar imports are in prewar boundaries while prewar GNP and industrial production are in postwar boundaries for Bulgaria, Czechoslovakia and Rumania. In comparable boundaries the prewar ratios of imports to GNP and industrial production should be somewhat higher than in the table in Bulgaria, slightly lower in Czechoslovakia, and considerably lower in Rumania.

between East and West Germany remains striking -- the ratio of imports to GNP is only one quarter of the prewar ratio in East Germany while it has almost recovered to the prewar level in West Germany.

Imports grew not only in relation to GNP, but also in relation to industrial production in all the listed countries, except the 2 Germanies, as also shown in table 18. Industrial production recovered from the war faster than did imports in most countries of both areas, but then lagged behind imports during the post-1950 expansion. Surprisingly, imports in the Eastern Countries, except Poland, rose faster than industrial production even between 1950 and 1955, a period when all of the countries were trying to become more self-sufficient. Apparently, rapid and broad industrialization created a derived demand for imports so large that it swamped the effects of import substitution.

2. Foreign Aid and Impositions

Unquestionably the postwar balance on economic aid and impositions has been highly unfavorable to Eastern Europe and highly favorable to Western Europe. The Eastern European countries had to make large net payments to the USSR for reparations and other reasons and these net payments were concentrated in the early postwar years, when they were most burdensome. By contrast Western Europe was a large net recipient of U.S. aid and most of this aid was obtained early, when it was most needed. The following discussion of foreign aid and impositions and of international capital movements will treat these complex subjects only in very general terms, for a detailed treatment would require a number of specialized studies.

No reliable estimate exists of Soviet takings from Eastern Europe, but an order of magniture of $15 to $20 billion in postwar prices probably is reasonable to cover dismantlings, reparations, and occupation costs. The bulk of this amount (probably some $10 to $15 billion) was taken from East Germany between World War II and the mid 1950's/ /(10 to 15 percent of East German GNP). Another half billion dollars at least is accounted for by deliveries of coal by Poland to the USSR at nominal prices. Soviet removals of fixed assets and current production on reparations account from Hungary and Rumania also were substantial, although much smaller than those from East Germany. There were also Soviet takings from the jointly-owned but Soviet-controlled companies in Hungary, Rumania, and Bulgaria. The great bulk of all these Soviet impositions came between World War II and 1953, and the burden on the Eastern European economies probably declined steadily over this period. In comparison with Soviet impositions, Soviet economic aid to Eastern Europe (which was entirely in the form of credits, although repayment obligations for some of these were waived), was small -- in the order of $4 billion, not much over one billion of which was extended before 1956. For its part, Eastern Europe extended some $2 billion in credit to non-communist / developing countries, all after 1955, and about one billion dollars to other Communist countries.

The large unrequited Eastern European exports to the USSR make a striking contrast with the even larger net receipt of U.S. aid by Western Europe. Total U.S. economic aid to the 9 Western European countries treated in this paper came to nearly $19 billion for 1946-64 (excluding UNRRA aid), $16 billion

of which had been disbursed by the end of 1962. (the U.S. also extended a half a billion dollars of aid to Eastern Europe, consisting mainly of PL-480 credits to Poland after 1956). For the 1946-52 period, U.S. economic aid on the average amounted to some 2 percent annually of the combined GNP's of the 9 Western European countries (about the average proportion for France, West Germany and Italy; a considerably large proportion for Greece and Austria; and smaller proportions for the other countries). These figures exclude some $13 billion of U.S. military aid, which was disbursed mainly after 1952. They also exclude private long-term U.S. investments in Western Europe, which have exceeded the flow of official and private aid from the Western European countries to the developing countries. Both U.S. private investments in Western Europe and Western European aid to developing countries have become important only since the mid 1950's.

To conclude, the balance of aid, impositions and credits was highly unfavorable to Eastern Europe for the postwar period as a whole, but the disadvantage for Eastern Europe (and the advantage for Western Europe) was concentrated in the early postwar years. Since the mid 1950's, both Eastern and Western Europe appear to have been net importers of long-term capital.

3. The Net Terms of Trade

Rough estimates of trends in the "net terms of trade" (the ratio of the export price index to the import price index) are shown in table 19 for Bulgaria, Czechoslovakia, Poland, these 3 countries combined, and, by way of comparison, the EEC countries. The movement of the "net terms of trade"

is nearly the some for the 2 groups of countries, except that the changes were more favorable to the Eastern group between 1950 and 1955 and more favorable to the Western group between 1955 and 1960. But there were wide differences in trends among Eastern countries. Czechoslovakia suffered a marked worsening in its net terms of trade in the early 1950's, which it has not yet made up, while Poland's terms of trade improved substantially from prewar years to 1950 and again from 1950 to 1955. These opposite trends between 1950 and 1955 may have been due to the stabilization of prices in intra-bloc trade at levels which favored primary producers, like Poland, but hurt importers of foods and industrial materials, like Czechoslovakia. In addition, there was a strong European market for coal, Poland's principal export of the early 1950's. The drastic fluctuations of Bulgaria's terms of trade appear to be due mainly to price fluctuations for tobacco, until recently Bulgaria's predominant export. There is no information on the terms of trade of the other Eastern European countries -- the combined price indexes for Bulgaria, Czechoslovakia and Poland were used to calculate price and quantum indexes in Hungary and Rumania. But although the information is very spotty, it appears to indicate that trends in the terms of trade in the East were not greatly different from those in the West.

Table 19

Net Terms of Trade*

	Indexes: 1964=100				
	Prewar	1950	1955	1960	1964
Bulgaria	168	--	111	99	100
Czechoslovakia	102	109	95	98	100
Poland	70	78	97	95	100
Above countries together	95	87	98	97	100
EEC Countries	96	87	89	96	100

* Ratio of export price index to import price index.

See Appendix C.

These findings on trends in the net terms of trade appear to be consistent with evidence on the pricing of Eastern European trade with the USSR and the West, which can be summarized as follows:

(1) Soviet foreign trade statistics show that the USSR charges Eastern Europe higher prices and pays Eastern Europe lower prices than it charges and pays for the same commodities in its trade with Western Europe.* The evidence is convincing for Soviet exports, which consist mainly of materials and foods with fairly definite prices, but much less so for Soviet imports because most of these consist of manufactures, for which meaningful price data are lacking.

* Horst Mendershausen, "Terms of Trade Between the Soviet Union and Smaller Communist Countries, 1955-1957", The Review of Economics and Statistics, No. 2, May 1959.

_____. "The Terms of Soviet-Satellite Trade: A Broadened Analysis", Ibid., May 1960.

(2) Eastern European trade statistics show that the Eastern European countries obtain higher prices from the USSR (and each other) than from the West for their exports of the same commodities. Comparisons of import prices are inconclusive. Corroborating evidence comes from Western trade statistics, which seems to indicate that Western countries pay the Eastern European countries less [redacted] for the same goods than in their trade with other Western countries.* It would appear, then, that (1) the USSR has better terms of trade with Eastern Europe than with the West; and (2) that Eastern European countries also have better terms of trade with the USSR (and each other) than with the West. [redacted] In other words, Eastern Europe appears to be discriminated against, on the one hand by the USSR, and on the other by Western Europe. There is nothing inherently inconsistent about this. A plausible explanation is that pricing in intra-bloc trade actually was based, as Soviet and Eastern European sources often state, on world market prices -- that is the actual prices used in world commodity markets or in contracts between large Western firms. The prices obtained in the West by the Eastern European countries were usually much less favorable to these countries than the

* Franklyn Holzman, "Soviet Foreign Trade Pricing and the Question of Discrimination", Review of Economics and Statistics, May 1962.

_____, "More on Soviet Bloc Trade Discrimination", Soviet Studies, August 1963.

Frederic Pryor, The Communist Foreign Trade System (Cambridge, Mass., 1963), Chapter V.

"world market prices". This is especially true of Eastern European manufactured goods, which suffer in world markets from tariff barriers, lack of publicity, reliable trade contacts and adequate servicing facilities, and from inflexibility in the planning and management of foreign trade. Exports of raw materials and foods fare better, but even these tend to receive lower prices than average because they are often sold in small lots and at the wrong time. The basing of prices in intra-bloc trade on actual world market prices (with many modifications, including a tendency to stabilize the prices of raw materials for a number of years) would tend to create similar trends in the terms of trade as in Western Europe. This, as we have seen, is what the statistics appear to show.

B. Evaluation

What conclusions can be drawn from the statistical analysis as to the relative influence of external factors on the economic development of Eastern and Western Europe? It seems certain that Soviet impositions in the early postwar years and the unwillingness or inability of the Soviet Union to make up for the loss of inter-zonal trade had a great deal to do with the severe lag of the East German economy behind that of West Germany. The enormous structural adjustments forced upon an economy whose imports in 1950 were only about 10 percent of the prewar level can be imagined. East Germany had to develop a substantial steel industry, production of nearly all types of heavy machinery, and transportation equipment, and many other industrial branches. Some of this forced structural change was bound to involve a loss of efficiency in the allocation of resources -- certainly

initially, and probably also in the long-run. In addition the lack of imported materials for many years held down the utilization of exiting plant capacity and the growth of labor productivity. This massive readjustment had to take place simultaneously with an outflow of uncompensated exports to the USSR that cut deeply into investment possibilities. Economic recovery from the effects of the war had hardly begun in 1950 and during the early 1950's, with the USSR taking 10-15 percent of GNP and with heavy pressure to improve living conditions rapidly, East Germany could not undertake a large investment program. As was shown earlier, investments reached a respectable share of GNP in East Germany only in the late 1950's, after reparations had ceased. By contrast, West Germany adjusted very easily to its separation from East Germany because interzonal trade had been a much smaller part of West German than of East German trade, the West German economy was much larger and more balanced, and there were broader trade opportunities abroad and large receipts of U.S. aid.

The evidence that measurable external factors were seriously disadvantageous is far less clear for the other Eastern European countries than for East Germany. The quantitative growth of imports was certainly more than adequate to sustain a rapid growth of output. Changes in the net terms of trade appear to have been generally similar in Eastern and Western Europe. In the early postwar years Hungary and Rumania paid substantial reparations, and the other Eastern European countries, unlike the Western European countries, were not net recipients of aid, but since 1955 the Eastern European disadvantage in this regard probably has been small.

To conclude, the measurable factors probably account fully for the severe lag in East German growth until the mid 1950's. It is reasonable to suppose also that they were largely responsible also for the lags of most other Eastern European countries behind Western Europe during the early postwar years of economic recovery and growth. Hungary and Rumania, the 2 countries which, after East Germany, were probably most affected by Soviet impositions, were the latest to regain prewar levels. Except in East Germany, where Soviet impositions affected mainly investment, the main impact of these impositions (or the lack of aid) probably was on consumption. But these external factors do not explain the decline in rates of growth in recent years nor the high investment costs in all the Eastern European countries during the postwar period.

The preceding analysis, since it deals only with measurable external factors, leaves out a highly important difference between Eastern and Western Europe -- the general foreign economic environment. This difference, however, is both external and internal, and it is most appropriately treated as an aspect of the broad institutional and policy framework of the two areas. Membership in the Soviet Bloc entailed among other things the adoption of Soviet-type economic policies and institutions and it is pointless to speculate about the extent to which Soviet pressure or the willing emulation of things Soviet by local communist parties were responsible.

The application of Soviet-type policies and institutions in Eastern Europe had interrelated effects on the domestic use of resources and on

foreign trade opportunities. Trade opportunities were to some extent limited by Western controls, but Soviet and Eastern European policies were much more important limitations.

For the individual Eastern European country, materials, foods, and machinery were almost always in short supply -- they could rarely be imported in the desired quantities and qualities. Consequently it was necessary to develop high-cost mineral resources, raise expenditures in agriculture to the point of small return, and overdiversify manufacturing production. Shortages of industrial materials were especially severe in the early and mid 1950's. In recent years availability of foodstuffs and technology have been increasing problems. Inability to import the most advanced or appropriate technology kept labor costs and often also investment costs higher than they might have been. This disadvantage was especially burdensome for the more developed countries, East Germany and Czechoslovakia, which depended on advanced technology to maintain their lead in productivity. Moreover, the cost of doing without first rate technology has increased in recent years as East Germany and Czechoslovakia have exhausted the opportunities for tapping "reserves" of unused productive capacity and labor and as all of the Eastern European countries have faced more exacting customers abroad.

Some of the overdiversification and development of high-cost production during the early 1950's can be traced to a form of Soviet exploitation -- the levying of requirements on Eastern Europe for a wide variety of machines and other goods, without regard for prior experience, factor endowments, or

economies of scale. East Germany and Czechoslovakia suffered most from such Soviet policies. Since the mid 1950's, however, the USSR has greatly increased its support for Eastern European economic development. The Soviet share of Eastern Europe's total imports has remained at about 40 percent since 1950, but since 1955 the USSR has supplied a growing share of Eastern European imports of industrial materials, some of which it produced at high marginal cost, and provided considerable amounts of grain in spite of domestic shortages. Moreover, the USSR has tried, although with little success, to bring about a more rational allocation of resources in Eastern Europe through intra-Bloc coordination of economic plans and specialization in production, thereby reversing previous policies.

At least since the mid 1950's, the external difficulties of the Eastern European countries appear to be largely symptoms of ailments which have affected all Communist countries. Shortages of materials were caused by excessively rapid increases in production of finished goods, by lack of coordination of national investment programs, and by inefficiency in the use of materials. Shortages of foods were due mainly to collectivization and to other policies depressing farmers' incentives. Lagging technology was the result of a system of economic incentives which rewarded increased production at any cost and penalized innovation and careful consideration of customers' interests. Uncertainty in deliveries of imported goods and components and the lack of flexibility in adapting import schedules to changing domestic needs reflected the general rigidity of management in foreign trade as well as the domestic economy.

One after the other, the Eastern European regimes have become aware of the poor performance of their economies, and have been groping for more effective economic policies and more efficient forms of planning and management. The revolution in Hungary and the near revolt in Poland in 1956 brought home the necessity for change to the regimes of these countries earlier than to those of the other Eastern European countries. Although the consumer-oriented priorities adopted at that time in both countries and the partial decentralization of management in Poland were short-lived, economic policies have been much more moderate and flexible since 1956 than before, and this early adjustment to realities is one of the reasons why the rate of growth of the Polish and Hungarian economies has not declined. The Czechoslovak and East German regime, however, in spite of rapidly declining economic "reserves", tried to maintain or accelerate economic growth, relying heavily on Communist Party activists to create the necessary stimulus, and in 1959-60 the Bulgarian regime went so far as to try a "great leap" somewhat on the Chinese model. It was the sharp slowdown of economic growth in East Germany in 1961, in Czechoslovakia in 1962, and in Bulgaria in the aftermath of the "great leap" of 1959-60, that brought home the need for economic reform in these countries, and, this example has created new pressure for reform in Poland and Hungary. Only Rumania, which has achieved increased rates of industrial growth since 1958, has been generally satisfied with the old system of economic planning and management.

Improvements in economic performance have been sought both through internal economic reform and through external assistance and international economic cooperation. The remainder of this paper will deal with the main outlines of these internal and external measures.

A. Economic Reform

Little by little, Eastern European economists and government officials have come to recognize two basic deficiencies in what we have been calling the "Soviet-type economic system". Planning was not based sufficiently on rational economic considerations; management was not flexible enough to adapt to changing needs. Lack of rationality in economic plans was due sometimes to inexperience, but mainly to the primacy and overdiversification of political objectives. The province of economic analysis was limited not only by politically-inspired institutional changes, such as the collectivization of agriculture, but also by the requirements imposed by politically-determined growth objectives. Until the past few years, moreover, economic analysis had to be performed with a very limited set of tools (such as the "material balances"), the use of more efficient and appropriate tools, such as linear programming, having been barred for ideological reasons. The basic form of ownership and management aside, the most restrictive feature of the system for economic planners was the politically-determined rate of industrial growth. If, as was usually the case, this rate was set beyond the economy's capabilities, extreme tautness in economic plans was inevitable and this entailed a forced "balancing" of the plans by such means as unrealistic

adjustments of coefficients for the use of materials, unrealistic estimates of investment costs, and the taking of resources from low-priority sectors/ such as housing. Moreover, the severe constraints caused by taut planning were felt by all levels of management which were forced to raise production by any means and could ill afford to risk cost reductions, product changes, or technological improvements that might reduce, even temporarily, the rate of growth of output. The same/ taut conditions created a sellers' market for almost all goods and gave all but the highest priority customers little chance to be heard; instead unsuitable goods were accepted, processed, and passed on, until they finally were bought by private consumers, who had few alternatives,/ or used at high cost in investment projects,/ or exported to relatively undemanding foreign countries, or simply left in inventories. Taut, overoptimistic planning for the overall rate of industrial growth also had serious implications for the structure of investment and the pattern of economic development. Unable to obtain enough raw materials from the other Communist countries, which also had taut plans, each country had to invest heavily in slow-maturing projects in basic industries. If we add to this the politically-determined priorities among economic branches, lack of access to first rate technology, and plain incompetence on the part of planners, a good bit of inefficiency can be easily explained.

The system of economic management was inflexible because it was operated as a huge bureaucracy, where each echelon made economic decisions on the basis of directives from above but with insufficient knowledge of the situation below. Constrained by what were often unrealistic and mutually inconsistent directives, the ministries, and their subordinate units had to work out all the details of a production and distribution program leaving the entreprises little choice on how to put this program into effect. What choice there was consisted mainly in ignoring lower-priority goals in favor of higher-priority goals, and managers' efforts tended to be directed to pleasing the government (or Party) boss rather than the customer. Moreover, a system of premia and other incentives which rewarded mainly fulfillment of gross production goals and an artificial price system which reflected neither marginal social costs nor consumer preferences created a poor basis for guiding unplanned decisions in line with national interests.

The reforms introduced in Eastern Europe during the past two or three years are aimed at these deficiencies, Neither Eastern Europeans, nor indeed Westerners, can be certain how deeply the reforms will have to cut into the Soviet-type "command economy" to bring a marked improvement in economic performance. The best publicized, and possibly the most thorough reforms are being introduced in Czechoslovakia. There the number of obligatory production and input goals for enterprises has been greatly reduced, Various measures of profits are to be a basis for bonuses and premiums. Part of investment decisions and most contracts with customers

are to be established between enterprises themselves. Producer prices are to contain charges for the use of fixed capital (as is already being done in Hungary) and are to be influenced by market conditions at home and abroad. Similar changes are being introduced in East Germany and Bulgaria, and some at least are likely to be introduced in Poland and Hungary. In all the Eastern European countries there is great emphasis on "scientific planning", which involves not just balancing of needs and requirements but "optimization" of programs, based on centrally or locally determined criteria, with the help of electronic computers. The desire to develop the branches of production for which the economy will be best suited in the long-term, to use modern technology, and to compete on world markets has at least partly replaced the early drive to increase the quantity of production at all cost. While trying to make plans more rational and management more flexible, however, the regimes have tried to avoid any real loss of control over the economy. The meeting place of the new system of planning and management with the power structure of the state and Party appears to be at the newly-formed intermediate administrative units, called Associations or Trusts, which control either an entire industrial branch (for example, machine tools), or a vertically integrated set of enterprises. In East Germany and Czechoslovakia at least the directors of these Associations on paper have very wide powers, similar in some respects to those of Western corporation managers. They could in theory run their subordinate enterprises largely according to market criteria, or they

could intervene directly in most enterprise activities. How much pressure will be put on these managers by the political authorities and how the managers will react to pressure remains to be seen.

B. International Cooperation and Foreign Assistance

1. Intra-Bloc Economic Cooperation

The search for increased efficiency through internal economic reform had a counterpart in the effort to promote economic cooperation among the Eastern European countries, but nationalism and the nature of the Soviet-type economic system have greatly hindered progress. The drive for increased cooperation, which began in earnest during the late 1950's, was intended to invigorate a largely inactive organization, the Council for Mutual Economic Assistance, usually called CEMA or COMECON. It was hoped to achieve a more rational distribution of capacity in basic industries and savings in investments and materials through coordination of investment plans; greater economies of scale and better concentration of technological effort through specialization in the production of manufactures; and a more effective use of scarce hard currency through cooperation in trade with non-communist countries. In spite of high level political pressure and innumerable meetings and proposals, however, there was very little progress in intra-bloc economic cooperation. Intra-Bloc trade continued to increase rapidly, but largely in the framework of bilateral agreements and as a consequence of separately established national plans. Specialization agreements have been limited to a tiny percentage of industrial output,

and apart from the construction of the "Friendship" oil pipeline, cooperation in investments has been minimal. The reasons for this failure are rooted in the very nature of the "command economy".* Lacking any sort of automatic regulator and arbiter for economic decisions and conflicts, such an economy needs an ultimate authority to make or enforce any decision. But there has been no such authority internationally, and so no way to force agreement on specialization, prices, investments, and so forth, or to apply sanctions in cases where agreements are not fulfilled. Khrushchev's proposal in 1962 for the creation of a CEMA planning staff with some supranational authority no doubt was intended as at least a first step toward a Bloc-wide "command economy", but the proposal failed to be adopted because of nationalistic opposition, notably from Rumania.

Failing a supranational authority, all of the internal weaknesses of the Soviet-type system of planning and management are magnified internationally, and its principal virtue, the ability to mobilize resources quickly for high-priority purposes, is inoperative.

2. Soviet-East European Economic Relations

The most obvious source of assistance for the Eastern European countries to improve their economic performance has been the USSR, the more so because of the lack of significant progress in intra-East European economic cooperation. As we have seen, the USSR has tried to help -- by providing some credits (since 1960, only to East Germany and

* See, for example, Michael Kaser, COMECON - Integration Problems of the Planned Economies (Oxford University Press, 1965).

Bulgaria), foods, and rapidly increasing amounts of industrial materials. In 1963, the USSR covered nearly 100 percent of the area's net imports of materials and fuels, compared with two thirds in 1960 and only 40 percent in 1955, thereby enabling the Eastern European countries to use a large share of their scarce earnings of Western currencies to buy specialized machinery. It is unlikely, however, that the USSR will be willing to continue increasing its support of Eastern European economic growth to this extent. Although the USSR gains some price advantage in its trade with Eastern Europe (as was indicated earlier), it is questionable whether this compensates for the disadvantages in the composition of trade. Soviet exports consist mainly of industrial materials and foods. Some of these, coal for example, are produced at high average cost, and many, including coal, iron ore, and grain, are produced at rapidly rising marginal cost. The exchange of such goods for machinery and equipment, the largest part of Soviet imports, is certainly profitable when the machinery and equipment embodies advanced technology that the USSR can produce only with difficulty if at all. Such is the case for Soviet trade with the West. But this exchange may not be profitable when the imports consist of ordinary machinery and equipment, which embody the same general level of technology as is available from Soviet production. Most Soviet machinery imports from Eastern Europe probably are of this type. By all indications, both the average and marginal costs of most machinery and equipment production in the USSR are considerably below those for raw materials and foods, and the gap is probably increasing. Probably the

main advantage to the USSR in importing machinery from Eastern Europe rather than producing it at home is as a source of flexibility. The Soviets have been able to import machines on special-order or in small batches, so that they could better concentrate on series production. In recent years, the Soviets have added their influence to other pressures for raising the quality and technological level of Eastern European manufactures, and have increased rapidly their imports of consumer manufactures from that area. To the extent that quality and technology are improved, however, opportunities for Eastern European trade with the West are increased as well.

3. Economic Relations with the West

Growing economic difficulties and the inability to solve these difficulties within the Soviet Bloc have increased the demand in Eastern Europe for Western goods, capital, technology, and knowhow, and increased the receptiveness to Western ideas. The binds of Marxist economic dogma have been loosening since at least 1955. The thaw went quite far in Poland as early as 1956, but only recently has [redacted] "market socialism" become ideologically respectable in Eastern Europe. This intellectual revolution obviously has had a great impact on the economic reforms that are being undertaken. [redacted] The trend has been less clear, however, in the more tangible aspects of economic relations. Western goods and technology have long been in high demand, but, except in Rumania, there was until recently little inclination to

treat trade with the West as more than a supplementary source of goods and technology.

The basic obstacle to increased trade with the West has been the inability of the Eastern European countries to market their exports of manufactured goods in the West, and their unwillingness to make the adjustments required for an expansion of such exports in the long-run. The temporary increase in the share of the West in Poland's foreign trade from 36 percent in 1955 to 42 percent in 1958 was due to U.S. credits under P.L. 480 and a temporary shift in Polish exports of coal from Eastern Europe to Western Europe. With the ending of U.S. credits and the weakening of the Western European coal market, the share of the West in Poland's trade has returned to about what it was before Gomulka's accession to power. Difficulties in exporting to the West have caused the share of the West in total trade to decline also in East Germany, Czechoslovakia, and Hungary since the late 1950's. In the early 1960's the West's share in these countries and in Bulgaria has been between 25 to 30 percent. Rumanian trade followed the opposite pattern -- the share of the West increased from 20 percent in 1958 to 32 percent since 1961. This shift was undertaken as an aspect of Rumania's policy of enhancing national independence and accelerating industrial development. What made it possible was that Rumania's 3 major types of exports, corn, petroleum products, and wood were readily saleable in the West and that in addition Western firms were willing to extend large export credits to Rumania.

In the past two or three years there have been signs that the more industrialized Eastern European countries were beginning to lay a sounder basis for the expansion of their trade with the West. In 1964, for the first time since the mid 1950's, there was a fairly general rise in the share of Eastern European trade taking place with the West. Although it is much too early to see a trend from these statistics, there are other favorable signs. One is the increased flexibility in production which should result from the internal economic reforms. Because production, and hence the use of productive capacity, will no longer be planned in so much detail, it will be easier for producers to adapt output mix to changing foreign demand. Although this increased flexibility will facilitate all foreign trade, it is especially important in the case of trade with the West. A second favorable development is the increased willingness of the Eastern European regimes to undertake production of manufacturing lines specifically for the Western market. East Germany is making a real effort to develop clothing production for sale in Western Europe. Joint production and marketing arrangements between Eastern and Western European firms (for example, the arrangements between Poland and the German firms Krupp and Grundig for the joint manufacture and sale of tape recorders) have been multiplying in the past 2 years, and may considerably enhance the ability of the Eastern European countries to sell manufactures in Western Europe. These arrangements, like many Eastern European purchases of Western European equipment, sometimes include credit terms and technical help. But the original features of some of them are to provide Western technical and quality control over Eastern European production and in addition the

name and connections of the Western firm to sell in Western countries. This knowhow and "goodwill" may be as important as the basic production technology and their possession may save the Eastern European countries a great deal of time and effort. At the same time, the Eastern European countries have been seeking better terms for their exports to the West by negotiating with GATT, looking for Most Favored Nation treatment in the U.S., trying to make better arrangements with the EEC and its member countries, and so forth. Lower tariffs and higher quotas in the West would help Eastern Europe's exports. In the long-term, however, the prospects for trade with the West depend mainly on the Eastern European countries themselves -- on the way they allocate their resources, and especially on how much they are willing to change the economic system to which so many of their economic problems can be attributed.

In all cases estimates of comparative economic levels (for GNP, industrial production, personal consumption) were made for a single postwar year. Comparative levels for other years were obtained by moving the base year comparisons by means of indexes for the individual countries.

Western European Countries

GNP in the Western European countries was obtained in terms of a common denominator (U.S. dollars in 1963 prices) in two alternative ways: (1) by applying official exchange rates to the values of GNP in domestic currencies in 1963; and (2) by using the geometric means of the two sets of dollar values in purchasing power equivalents for 1955 as estimated for the OEEC (Milton Gilbert and Associates, Comparative National Products and Price Levels, Paris, OEEC, 1958), and converting these to 1963 prices by means of the U.S. official GNP deflator. For Austria and Greece, the only countries discussed for which Gilbert did not estimate purchasing power rates, it was assumed that the dollar value of GNP at purchasing power rates exceeded that at the official rate in 1963 by the same percentage as in West Germany and Italy respectively.

The relative magnitudes of industrial production in Western Europe were obtained from the weights used by the OECD to calculate the combined industrial index for the member countries.

Eastern European Countries

The dollar value of GNP and personal consumption in Eastern Europe and the comparison of industrial production in these countries with Western Europe were obtained via direct comparisons between Eastern European countries and

West Germany. The estimates for the Eastern European countries relative to West Germany were then linked into the comparisons between West Germany and other western countries. Consequently, two alternative sets of dollar figures for GNP were obtained for Eastern Europe, corresponding to the two alternative dollar estimates for West Germany. The year for the comparison with West Germany is 1955. West German data for that year exclude the Saar.

In the comparison with West Germany, two sets of estimates were made which, in some cases, complement each other, and, in other cases, serve as checks against each other.

(1) GNP at current domestic prices in Czechoslovakia, Hungary, and Poland (from sources listed later) was converted to Deutschmarks by means of estimated purchasing power ratios for individual components of GNP. This calculation yielded estimates for the major end uses of GNP, as well as for total GNP. The calculations for personal consumption are more reliable than those for the other end uses. The Deutschmark values so obtained were then related to the actual values for West Germany in 1955.

(2) Quantity indexes were calculated relating personal consumption, net industrial production, and net agricultural production in each Eastern European country to those in West Germany. The indexes were calculated from commodity samples in physical units, weighted by West German prices (except for the metal-working component of industrial production which was obtained by converting domestic values of production into Deutschmarks at calculated exchange rates). Group indexes for industry and consumption were aggregated by

means of West German value weights (value of purchases for personal consumption; value added for industrial production). For agricultural production, estimates of purchased inputs were deducted from estimates of agricultural output (net of own production used for feed or seed, or wasted). This set of calculations yielded values of personal consumption, industrial production, and agricultural production as relatives of West Germany. The two sets of calculations are methodologically consistent, the first involving conversion by means of price indexes with Eastern European quantity weights, and the second involving quantity indexes with West German price weights. Both sets of calculations give results for Eastern Europe in West German Marks. Because of the tendency for relative quantities to be inversely correlated with relative prices, conversion of West German magnitudes into Eastern European currencies (the reverse of the above) probably would give less favorable results for Eastern Europe. Consequently, the original estimates for Eastern Europe were lowered by various percentages by analogy with estimates for other countries and on the basis of other information.

There were discrepancies for other reasons also, between the results of the comparison by means of price indexes and those of the comparison by means of quantum indexes. In the case of personal consumption, the price indexes were obtained using commodity samples which, although often rather small, at least could be defined quite specifically in regard to type and quality of product. The quantity comparisons, however, necessarily used broad, undifferentiated series, such as cotton fabrics in meters or tons, to represent

a very wide variety of products. The final estimates of personal consumption were based mainly on the price conversion for Czechoslovakia, Poland, and Hungary. The final estimate for GNP was a compromise between the results of the price conversions and those of a weighted average of the quantum comparisons for industrial production and agricultural production.

Appendix B

Measurement of Economic Growth

Western European Countries

All of the postwar calculations of the growth of GNP and its components by origin and use are taken from OECD statistics. Series in constant 1954 prices were used for 1950-60. These series were linked in the year 1960 with the new series in constant 1958 prices. The linking was done independently for GNP, for industrial production (including construction) and for agricultural production (including forestry). The growth of services in constant prices was calculated as a residual -- a method which may give different results for the years after 1960 than the direct calculation of trends in services because the change from 1954 to 1958 weights had some effect on the measurement of growth of GNP. The alternative, which would have been to recalculate the growth of GNP in 1954 prices after 1960, was rejected. A similar method was used to calculate the distribution of and trends in gross fixed investment.

The prewar estimates for Western European countries are mainly from OECD and FAO sources. Indexes of industrial production excluding construction were used to link prewar years with the postwar series of GNP originating in industry and construction, beginning in 1950. The agricultural indexes for prewar years are for agricultural output (net of feed, seed and waste from own production but not of inputs from outside agriculture) and exclude forestry. They were linked in 1950-53 (average) with postwar series for

GNP originating in agriculture and forestry.

The share of gross fixed investment in GNP at factor cost in the Western European countries was estimated by means of a rough rule of thumb. It was assumed that the correct relation would fall between two sets of estimates: (1) the ratios of gross fixed investment at market prices to GNP at market prices (which implies a burden of indirect taxes -- net of subsidies -- proportionately as large on investment as on the GNP as a whole); (2) the ratios of gross fixed investment at market prices to GNP at factor cost (which implies that there is no burden of indirect taxes on investment). The rule of thumb used in this estimate was to take the midpoint of the range of ratios obtained with methods (1) and (2). For some countries this method may give rise to significant errors, but in general it seems reasonable to assume that the midpoint of the range is closer to the true figure than either of the extremes. It was assumed in addition, that the sectoral distribution of gross fixed investment at market prices could be used to represent the distribution at factor cost.

Eastern European Countries

For Czechoslovakia, Poland, Hungary, and Bulgaria, the estimates of economic growth are mainly from the work of the Research Project on National Income in East Central Europe at Columbia University under the direction of Thad Alton. This project has published monographs on the structure of the Czechoslovak, Polish, and Hungarian economies and a large number of STATINTL Occasional Papers of the project have either been published [redacted]

[redacted]

The principal publications of the project, as well as some

STATINTL of the main supplementary sources used in this paper are listed at the end.

STATINTL

For East Germany, extensive use was made of the work of Wolfgang Stolper (The Structure of the East German Economy, Cambridge, 1960) and of estimates by Edwin Snell.

For Rumania, use was made mainly of official Rumanian series and of an index of industrial production calculated by the Alton project.

1. Sectoral Weights and Share of Investment in GNP

The percentage distribution of GNP at factor cost provided the weights for the principal sectors of origin with which sectoral indexes could be combined to calculate indexes for total GNP. For Czechoslovakia, Poland and Bulgaria in 1956 and for Hungary in 1955, the distribution of GNP at factor cost was obtained from the Alton studies with one adjustment. To estimate the contribution of each sector to the GNP at factor cost, the Alton studies first determine the labor cost attributable to each sector. They then impute the cost of non-labor factors by redistributing to each sector the part of total GNP in established prices which is not accounted for by labor costs in proportion to the sectoral distribution of fixed and working capital. This procedure implies a constant rate of return to all types of capital. Although this assumption has some theoretical merit, rates of return actually vary considerably in market economies among the sectors, the return usually being much lower on housing than on other assets.

For this reason, and to avoid making housing services an unreasonably large share of GNP, the Alton estimates were adjusted to give housing a rate of return one-half as high as that of the economy as a whole. In the absence of any detailed national accounts on Rumania, it was assumed that the sectoral distribution of Rumanian GNP at factor cost in 1956 was the same as that of Bulgaria. This analogy was suggested by the roughly comparable level of industrialization of these countries in 1956 (as reflected in similar per capita GNP's).

For East Germany, estimates by Snell of the distribution of GNP in 1936 German Marks were used. Stolper's work shows that it makes little difference in the sectoral distribution whether 1936 Reichsmarks or 1950 Deutschmarks are used. Unfortunately, detailed postwar estimates in East German marks are not available, but what information does exist on the East German national accounts and price structure appears to indicate that prewar German prices do not greatly distort the picture.

The estimates of gross fixed investment as a share of GNP at factor cost in Czechoslovakia, Poland, Hungary, and Bulgaria are from Alton, except for an adjustment for housing corresponding to that on the sector of origin side of the accounts. For East Germany they are from Snell. As for Western Europe, it was assumed that the sectoral distribution of gross fixed investment at market prices could be used to represent the distribution at factor cost.

2. Sectoral and End Use Indexes

The sectoral indexes and those for personal consumption and gross fixed investment cover the postwar years from 1950 through 1964 and a prewar year (1939 for Bulgaria, 1937 for Czechoslovakia and Poland, 1936 for East Germany, and 1938 for Rumania). Prewar estimates are intended to represent production in the postwar territory, except in Poland, where they represent the prewar territory.

All indexes for Czechoslovakia and Poland, (through 1962) and for Hungary (through 1960), the sectoral indexes for Bulgaria (through 1960), and the industrial production index for Rumania (through 1964), are from Alton. The methods of calculating these indexes are approximations of those used in Western countries. Industrial production indexes were obtained mainly by aggregating commodity series in physical units by means of weights made up of wage bills or other substitutes for value added, supplemented by prices. Construction indexes were obtained from data on inputs of materials into construction. Agricultural indexes were calculated from estimates of agricultural output (final product) of all major agricultural commodities, from which estimates of industrial inputs were deducted. Indexes for services are a composite of such indicators as ton-kilometers carried in various modes of transport, retail trade turnover in constant prices, the growth of the housing stock, and employment in various types of private and government services. Personal consumption indexes reflect the weighting of series on consumption of goods and

services, mainly in terms of physical units, by retail prices and value of purchases. The indexes for fixed investment combine estimates of construction expenditures (usually the same as those for GNP originating in construction) with estimates of apparent consumption of machinery and equipment. The Alton estimates were extended for the years after 1962 mainly by adjusting official Eastern European series. Official series for national income originating in industry, construction, agriculture, and other "productive" sectors were used for Czechoslovakia, Poland and Hungary. Comparisons show that the differences between most of these official series and the calculated series have tended to decline over the years and in some cases (for example, industrial production in Poland)that the differences had disappeared. Consequently, the use of these official series probably does not give bad results, especially for only a few years. Two adjustments had to be made, however. First, some (rather arbitrary) allowance was made for the growth on "non-productive" services, which are not included in official Eastern European national income statistics. Second, the sectors were reweighted in line with the estimates for earlier years. For both of these reasons, the calculated growth of GNP in these years differs considerably from the official growth of national income. For Rumania in the entire period, official indexes were used for value added in agriculture. For Bulgaria, official series for gross fixed investment, including investment by collective forms, were used.

The indexes for industrial production and agricultural production, in East Germany are from Stolper through 1957, and are simplified updatings of Stolper's series for later years. For personal consumption, Snell provided estimates through 1955 and a new quantity index, obtained mainly by weighting East German series on the consumption of individual commodities with West German retail price weights was used after 1955. The series on gross fixed investment were obtained from official East German data on investment in machinery and in construction and on investment in industry and agriculture in current prices, and from various estimates of price changes for machinery and construction.

Appendix C

Foreign Trade Statistics

The foreign trade analysis required mutually consistent series on: (1) the value of imports and exports in current dollars; (2) the value of imports and exports in constant (1963) dollars; (3) the average unit value of imports and exports in relation to the 1963 price level.

For Western European countries these series are available from the United Nation's Yearbook of International Trade Statistics, except the most recent years, which were covered by OECD statistics. For Eastern European countries, the series in current prices are from the UN source mentioned above and the statistical yearbooks of the various countries. Poland and Czechoslovakia for the postwar years and Bulgaria for both postwar years and 1939 also provide quantum indexes of imports and exports in their statistical yearbooks. A quantum index for Czechoslovakia, relating 1937 to 1948, was obtained from Statisticky Zpravodaj No. 7-8, 1949, p.251. This index was linked to the postwar index, which begins in 1948. For Poland quantum indexes relating prewar to 1950 were taken from Josef Krynicki, Problemy handlu zagranicznego polski (Warsaw, 1958). This index was linked to the official postwar quantum index in 1950. Unit value indexes for Bulgaria, Czechoslovakia and Poland were derived from the series in current dollars and the quantum series. It was assumed that average unit values for imports and exports in Rumania and Hungary changed in the same way as the weighted average for Bulgaria, Czechoslovakia, and Poland.

For East Germany, the postwar export series beginning in 1957 and the import series for the entire postwar period are from official East German statistical yearbooks. Official East German export data exclude reparations. Reparations were added by means of estimates by Snell which are based mainly on the publications of the West German Social Democratic Party (in particular, SPD Information Service, Die reparationen in der Sovietzone von 1945-1952, Denkschriften no. 51). Estimates of East and West German trade, including inter-regional trade, in 1936 are from UN/ECE, Economic Bulletin for Europe, 1949, no. 3, p.26. This source gives a breakdown of trade in the Soviet zone of occupation, West Germany and Berlin in 1936, with each other and with the outside world. To obtain a correspondance with the postwar division of Germany, the trade of Berlin was further subdivided between East and West Berlin. The estimates of prewar East and West German trade in 1936 prices were linked to estimates of postwar trade in the same prices.

Western European trade statistics are given f.o.b. for exports, c.i.f. for imports. Eastern European trade statistics were given this same way before World War II, but since 1950 imports have been given f.o.b., except in Hungary. To achieve greater comparability with Western statistics and prewar Eastern statistics, the postwar import series for the Eastern European countries, except Hungary, were increased by 11.1 percent (on the assumption that the f.o.b. value of imports was 90 percent of the c.i.f. value). Other possible causes of differences -- for example, in the treatment of re-exports and in the method of recording trade (by country of origin or destination or by country of payment) -- were not adjusted for.

Principal Sources of Statistical Data

I. Publications of the Research Project on National Income in East-Central Europe at Columbia University (Alton Project)

Monographs:

Czechoslovak National Income and Product in 1947-48 and 1955-56 (Columbia University Press, 1962)

Hungarian National Income and Product in 1955 (Columbia University Press, 1963)

Polish National Income and Product in 1954, 1955, and 1956 (Columbia University Press, 1965)

Occasional Papers (Multilithed):

Published to date:

1. Growth of Czechoslovak Trade, Banking, and Insurance, 1937-1962.
2. Trends in Czechoslovak Housing, Government, and Other Services, 1936-1962.
3. Czechoslovak Index of Investment, 1937-1962: Machinery and Equipment.
4. Czechoslovak Index of Construction, 1937-1962.
5. Indexes of Polish Industrial Production, 1937-1960.
6. Output of Czechoslovak Forestry, Fishing, and Hunting, Trapping and Game at Constant 1948 Prices, 1936 and 1946-1962.
7. Czechoslovak Agricultural Output, Expenses, Gross and Net Product and Productivity, 1934-1938 and 1946-1962.
8. Hungary, Index of Transportation and Communication Services, 1938-1962.
9. Output and Value Added in Czechoslovak Transportation and Communications, 1937 and 1946-1962.

Awaiting Reproduction:

Personal Consumption in Poland, 1938 and 1946-1962.

Czechoslovak Industrial Production Index, 1937-1962.

Personal Consumption in Hungary, 1938 and 1947-1962.

Czechoslovak Gross National Product by Sectors of Origin and by End Uses, 1937 and 1948-1962.

Index of Hungarian Domestic and Foreign Trade, 1938 and 1947-1962.

Trends in Hungarian Construction, 1938 and 1947-1962.

National Income and Product of Bulgaria in 1956.

Trends in the Service Sectors of the Hungarian Economy, 1938-1962.

II. Other Statistical Sources on Eastern Europe

Official Statistical Yearbooks (various years):

Bulgaria: Statisticheski Godishnik

Czechoslovakia: Statisticka Rocenka

East Germany: Statistisches Jahrbuch Der Deutschen Demokratischen Republik

Hungary: Statisztikai Evkonyv

Poland: Rocznik Statystyczny

Rumania: Anuarul Statistic

Other Sources:

Wolfgang Stolper, The Structure of the East German Economy (Harvard University Press, 1960)

Greger Lazarcik, The Performance of Socialist Agriculture: A Case Study of Production and Productivity in Czechoslovakia, 1934-38 and 1946-61 (L.W. International Financial Research Inc., 1963).

Vaclav Holesovsky, Personal Consumption in Czechoslovakia, 1937, 1948-1960 (University Microfilms Publications - PHD Dissertation, Columbia University).

U.S. Bureau of Census, Foreign Demographic Analysis Division, Estimates and Projections of the Population and Labor Force of the European Communist Countries, 1950, 1955-65 (Mimeographed, March, 1965).

III. United Nations and OECD Sources

OECD, Statistics of National Accounts, 1950-1961

OECD, General Statistics, January, 1965

OECD, Manpower Statistics, 1950-1962

OECD, Main Economic Indicators (Various Issues)

United Nations, Yearbook of International Trade Statistics, 1960 and 1963